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THE CAVALRY JOURNAL

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Members of a U. S. reconnaissance unit drive their M-8 armored reconnaissance car through the battered streets of Montebourg, France.

JULY-AUGUST, 1944

MODERN RECONNAISSANCE

This long awaited and much needed book has been compiled and edited by *The Cavalry Journal* staff.

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Published Bimonthly by The United States Cavalry Association

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Publication date July 20, 1944. Deadline date, next issue: August 10, 1944.

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Editorial offices: 1719 K Street, Northwest, Washington 6, D. C. Copyright, 1944, by the U. S. Cavalry Association. Publication offices: 1406 East Franklin Street, Richmond, Virginia. Entered as second class matter at Richmond, Virginia, under the act of March 3, 1879, for mailing at special rate of postage in Section 412, Act of October 3, 1917. Terms: Domestic subscriptions, individual and organization, $3.00 per year. Foreign, $3.50 per year. Canada: including War Exchange Tax, $3.50. All subscriptions payable in advance. Single copies, 75c. Extra copies to subscribers, 50c. THE CAVALRY JOURNAL *does not* carry paid advertisements.

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TRIPHIBIOUS TRU

by Brigadier E. C. Anstey, D.S.O.*

TRIPHIBIOUS warfare is not merely amphibious warfare with an air component added. As developed today and exemplified on the beaches of Normandy it is far more than that. The recent invasion of Europe differs as much from an overseas operation of the last century as the teamwork of a football match differs from that of a relay race. One is the consecutive activity of two agents with a brief communal overlap; the other is the intimate relationship of a close marriage partnership.

Weave the operations of a mighty air force into those of the land and sea forces—coöperative, sometimes alternating, often contemporary, and always intimately related—and it is possible to get some analogy with the remarkable development of warfare that is called triphibious. Nothing comparable has been seen in any previous war.

Former Conception of Army-Navy Relationship

The ships which bore troops to the Crimea or down the Potomac to the Yorktown Peninsula and the James had fulfilled their task when the men reached the shore. The short range and the primitive gunnery of the ship's guns forebade much assistance to the fighting on land.

Even in the Dardanelles, where the British fleet silenced Turkish batteries and gave some support to the landing and further fire in support of the troops ashore, the effectiveness of the support was limited by the naval gun control system of the period. Gun sights designed to engage targets at sea level could not readily be adapted to the needs of land warfare on an undulating shore. The art of indicating land targets and of firing indirect at a hidden enemy had not yet been developed.

Aircraft, radio and the internal combustion engine, which makes the first two possible, have revolutionized war. That, of course, is not trite. But more than those factors was needed for the development of triphibious technique as it is known today.

Lessons From the Pacific

The conceptions which bore such rich fruit in the Allied invasion of France derived directly from the experiments, experience and achievements of Americans and Australians in the Pacific. From the landing at Guadalcanal onwards, the extraordinary spirit of brotherhood and unity which attained such perfection there has resulted in an interplay of activity by the three services which is continuous and which has consequently affected not only the tactics and the technique of an overseas operation, but the strategy as well.

The American and Australian experiences in the Solomon, Gilbert, Marshall, and Admiralty Islands furnished the background of a perfect school for the successful invasion of Normandy. Fighting in an archipelago is the quintessence of triphibious warfare for the reason that throughout the battle the navy continues to participate as an active element of combat. This continued coöperation appears in its highest form in the attacks on atolls in the Pacific, where the ground surface is so small that it is never out of range or observation from the sea.

Development of Triphibious Warfare in European Theater

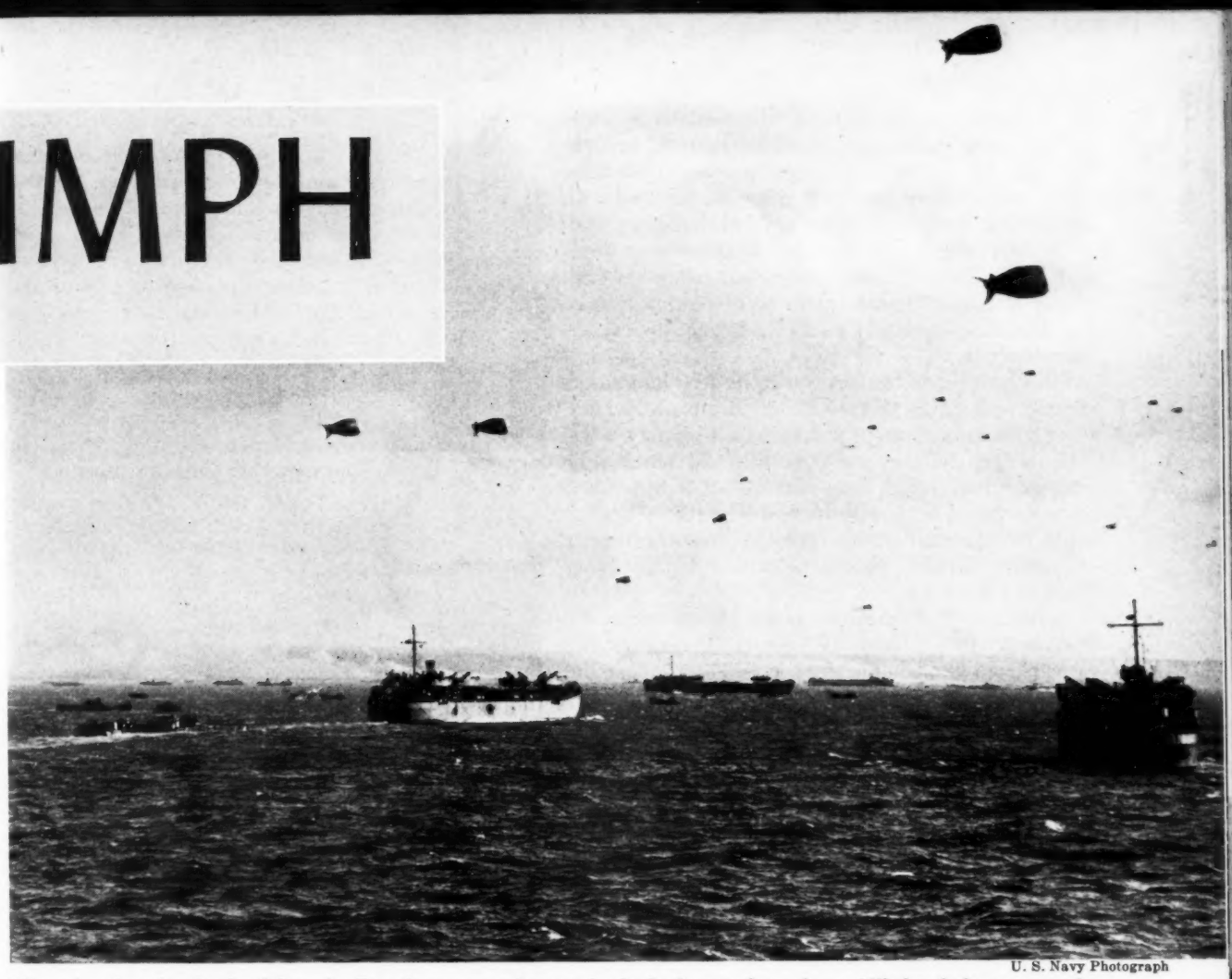
Such conditions have not been present to the same extent elsewhere. Britain's navy helped Montgomery on many occasions with gun and monitor fire on his extreme right flank in the long advance from El Alamein to Tunisia, and supported the initial landings in Sicily. At Salerno when the enemy's armor came within view, naval fire smashed back the most dangerous tank attack that the Germans made.

In France the supporting naval gunfire was brought to a much higher pitch. Great as the value of the Pacific experience has been, the scope and conditions of

*Military Correspondent of the *Sunday Times* and *Daily Sketch*, London.

D Day on a Normandy beach. Men and matériel pour ashore from transports in background. Dead and wounded are lying on reef where they fell from German fire.

British Official Photo



U. S. Navy Photograph

Like a low-hanging bank of fog, the French coast can be seen in the background as a huge Allied task force moves in against the foe on D Day plus one. Battleships, destroyers, landing craft of all kinds and sizes participated in landings.

the operations in Europe demanded special study and treatment. The size of the invasion armada immensely complicated the naval problem. The cramped conditions in a small country like England made the assembly and dispatch of armies more difficult. And the fixed defenses of the French coast had been developed to a pitch of complexity unmatched in the Pacific.

Collection of Information for Invasion

The first direction in which the coöperation of the services was necessary was in the collection of information about the problem in all its aspects. Much was learned, of course, of German defensive measures from the attacks on Dieppe and St. Nazaire. But detailed knowledge of the whole coastline within air cover of Britain was necessary, and the Air Forces flew thousands of sorties to obtain the enormous string of photographs which eventually covered the western shores of France and their land approaches.

Admirable as these photographs were they could disclose little about the nature of obstacles in and out of the water, the minefields and the geological details of the sea bottom, the beaches and the hinterland.

Guided by the photos taken from the air, parties of engineers were landed by the Navy without discovery at various points of the coast eventually chosen for attack. They examined the obstacles without discovery, probed the soil, tested the going for tanks or track vehicles, and came back with specimens of sand and soil which allowed essential precautions to be taken to prevent vehicles being stuck as they landed on certain beaches.

The Strategic Plan

With all this mass of information so laboriously collected by the combined exertions of the three services it became possible to make a strategic plan. The extent to which triphibious warfare affects strategy at once became apparent. Formerly the main consideration was to find suitable landing beaches conveniently placed for the land objective that the army wished to take.

Now the objectives themselves had to be considered from three angles. The soldier wishes to land where he can bring the enemy's army to battle in unfavorable conditions for the enemy and in the most favorable conditions for himself. He demands that his air force

should achieve superiority over the battle area before the operation starts and should maintain it throughout. And he requires the largest possible force flung ashore in the shortest possible time and supplied with all the requirements of a great army in the field.

In the Pacific where the land objectives were atolls and islands of small extent, or countries where the difficulties of nature confined fighting to restricted areas, the initial air superiority could be attained by carrier-borne aircraft.

On a continental battlefield with its deep hinterland, covered with a maze of enemy-controlled roads and railways, ammunition dumps and arsenals of military stores, with its deep defenses and powerful coast batteries, its minefields and its radio installations—all of which had to be destroyed or damaged seriously before a landing could be launched—it was essential that the theater chosen for invasion should be within fighter flying reach of Britain.

In the next place, the area chosen had to contain airfields or landing grounds, or sites which could readily be converted into landing strips in order to provide the essential air cover and support for the battles after landing.

Third, it was necessary that the chosen theater afford sufficient suitable beaches within cruising range of the specialized landing craft.

Last, there had to be a deep-sea port nearby which the army could capture within a reasonably short time and relieve the strain on the naval personnel necessitated while landing all men and matériel on beaches. In the end, a port is essential for landing the quantity of heavy paraphernalia that armies eventually require.

Ahead of the Army of Liberation, Allied Air Power pounded German coastal fortifications, made gaps in Hitler's concrete defenses. Here a U. S. soldier examines one end of a connecting tunnel between strong points and underground fortresses, wrecked by bombers attacking invasion areas in northern France prior to D Day.

Logistics

It is not necessary to expend here on the immense complications to the working out of such plans afforded by the problem of shipping. The claims of the maintenance of Britain, the operations in the Mediterranean and the Pacific, the supply of oil to the navies and air forces, the transfer of American forces to Europe and the armada needed for the invasion itself provided a whole series of problems in which all three services as well as many civil ministries were intimately concerned. The combined operations of the Allied navies and air forces in combating the U-boat menace with such wonderful success were of paramount importance in clarifying the dubious merchant shipping situation.

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Shells from Navy guns knocked out this German fortification overlooking a Normandy beachhead point. The installation was soon converted into an Allied Command Post.

As D-Day approached the invasion troops began to move into assembly areas from which they were to be embarked. The navy had chosen the embarkation ports and beaches, assembled the craft and fixed the times when loading must be completed. The army, working hand in glove with the navy, prepared the loading tables and timings and moved the troops in their right order to the right places. And the air forces maintained constant watch and ward over all.

Air-Navy Preinvasion Preparation

But it was in the landing operation itself that the most perfect coördination of the activities of the sailor, the soldier, and the airman was displayed. The pounding of the defenses from the air, the suppression of all enemy air interference, the cutting off from the interior of the area under assault and the provision of last minute information about enemy movements, carried out so brilliantly by the combined air forces on a colossal scale, were supplemented by the terrific fire of the fleet's guns directed with an accuracy and rapidity which has never hitherto been attained.

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This view from the interior of a large German coastal defense gun emplacement shows German gun crew killed and gun knocked out by Allied artillery and naval guns. Action took place during the American advance across the Cherbourg Peninsula, which isolated the German garrison.

Greater progress has been made in this aspect of naval gunnery than in any other direction. Nowadays artillery officers using wireless, following the troops closely, can direct the fire of ship's guns with amazing success and quickness, and reports have been received of some phenomenal shooting on targets far inland which has had an immense influence on the fighting. The coöperation of the warships with the army has been extended from targets they could see on beaches to the limit of their range inland. But the full and constant exploitation of this invaluable naval gunnery would have been impossible if the air forces had not afforded the ships the immunity from air attack which they did.

Navy-Army On the Beaches

On the beaches too the intermarriage of navy and army is closer than it was. The dividing limit of responsibility has of course always been high-water mark. Formerly, landing parties leaped from boats as they grounded and splashed ashore, and the naval responsibility ended. The art of waterproofing men and vehicles and the development of specialized landing craft have altered that.

Disembarkation from these barges into deep water has become an art which the navy was vitally concerned that the army should learn. Accordingly, naval officers had to take a hand in the training of the soldiers. Moreover, army operations begin in deep water where the enemy's mines and obstacles are located. The engineers, who have to lift the mines and destroy the obstacles, were dependent to a very great extent on the way the naval men handled the boats or barges which brought them inshore. The whole operation, which is one of the most difficult in war, and on the performance of which the success of the great invasion of Europe greatly depended, was a fine example of the collaboration attained by the navy and army in the study, preparation and execution of a combined operation.

Army-Air in Air-borne Landings

While the soldiers and sailors were working hand in hand in this fashion on the beaches, the air force and the army were collaborating brilliantly some miles inland, in the biggest and most ambitious airborne operation yet attempted. The analogy with the sea-borne force was a very close one. Instead of the navy, the air force carried the troops, either as parachutists or in gliders, and troop-carrying transports, watched over them during their journey and acted as their artillery after landing.

The complicated problems of assembly, of timing departures, of forming up convoys and of landing them accurately to time and place, solved in such perfect fashion by the navy, were closely paralleled in the air-borne part of the operation and were solved with equal brilliance.

For conception and execution the part played by the air-borne divisions in the landings in Normandy has never been equalled. More credit rests on those divisions for the success of the invasion than has yet been realized. Their part was not finished with the landing, any more than the participation of warships in the battle ended with the first beaching.

Triphibious Triumph

As these words are written, United States troops are fighting their way into Cherbourg. Ships of the British and United States Navies are pounding the port's defenses. Bombers rain their missiles on the great concrete-emplaced batteries. And as the Americans fight their way forward, their British and Canadian comrades hold the German panzer divisions in their grip and so protect the American rear.

The fall of Cherbourg will be a triumph for all three elements of the service—land, sea, and air—acting as a perfect triphibious team under the inspiration of General Eisenhower and the technical leadership of General Montgomery.

Troops cautiously pass a burning German pillbox two miles from Cherbourg. Dead Germans lying outside the blasted enemy stronghold are grim testimony to the fierce fighting before the outer defenses of the port were breached. Cherbourg fell to troops of the U. S. First Army June 30. 54,000 prisoners, many supplies were taken.

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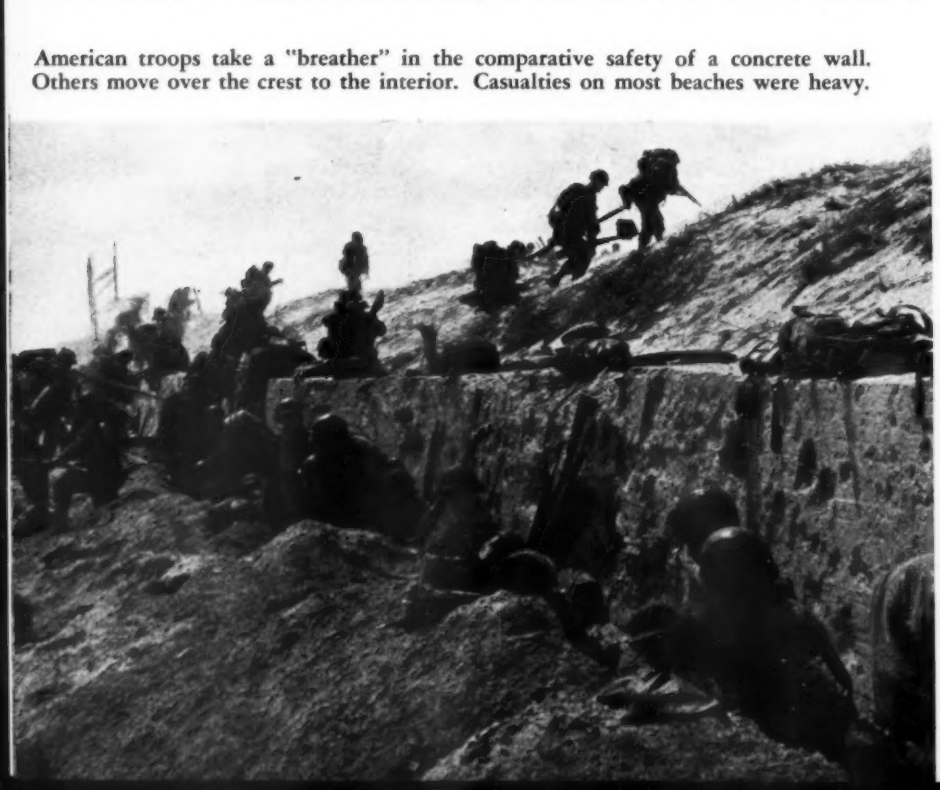
From this invasion beach on the coast of France, 8 June 1944, masses of men and equipment pour inland from the various landing craft off shore. From D Day on, more than 3,000 vessels plied across the English Channel. Naval fire knocked out enemy guns and tanks. Planes formed a prote[c]tella fo[r] ferried airborne troops. Ground forces [b]e throug[h] derwater obstacles, over bodies of com[b]establish[ed]

American troops take a "breather" in the comparative safety of a concrete wall. Others move over the crest to the interior. Casualties on most beaches were heavy.

LST grinds ashore, spews forth four je[e]ld their amount of matériel flowing onto the [b]t. Ret[r]



Beachhead In France

U. S. Signal Corps Photos

...rotella for land and sea, dropped bombs, ...ces through heavy enemy fire, mines and un... ...established a foothold in Hitler's Europe.

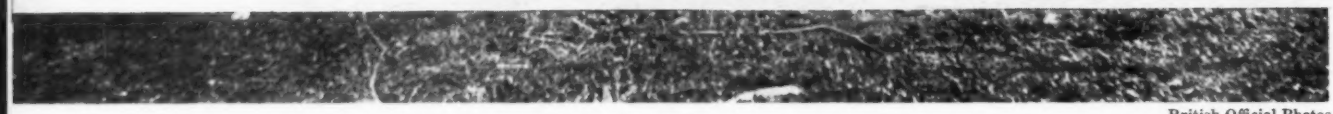
American paratroops, moving cautiously into a French village, take cover and concealment from trees and buildings. Paratroops landed behind German lines on D Day cut vital communications, destroyed gun positions, held bridges.

...r jeep their utility to the ever-increasing ...e ...t. Return trip will carry wounded.

American assault troops, full pack, including a machine gun, move along a cliff. Quantities of equipment, brought ashore from landing craft, lie at the base.

A Battle In Normandy

*by Leonard Mosley**



British Official Photos

British airborne troops, landed in Normandy on D Day, dig into positions ahead of the field in which they were landed.

"THIS," said the paratroop captain, "is going to be good. Do you remember the gap we left in our lines just around Breville? Well, Jerry's found it at last and he's coming through. We have a report of at least 600 panzer grenadiers advancing through the woods and believe that they're to try to drive through Ranville to break our line. Well, what we are going to do to those Jerries should make a nice little story for you. Look."

He pointed along the walls and through the orchards and when you looked hard you could see British troops everywhere.

They were well dug in among bushes and grass, and only the green camouflaged tops of their helmets poked above the skyline—that and the muzzles of their Brens, heavy machine guns and Stens.

It was just before noon that we saw the first Germans. Over there on the other side of the dropping zone you could suddenly see figures moving among trees. We watched them forming up into batches of 10 to 15 men.

No one fired. Only the dull boom of artillery from somewhere away in the distance, and the busy hum of fighting planes disturbed the placid Saturday morning.

Shortly after noon the German attack began. In batches of 10 and 15 spread out over 200 or 300 yards, the German infantrymen came in at a run. They plowed over the waving corn in the black plough-land until they reached a line of wrecked gliders. Then, they fell on their faces and lay there. After a few minutes they got up again, ran forward, then fell flat again. It went on like that for about 400 yards. Still, no one fired.

From somewhere in the woods, a German mortar gun was going into action and its shells fell all around us and in the serried rows of gravestones in a churchyard. Splinters fell among us. There were casualties. But there was no retaliation.

*With British Sixth Airborne Division, France, June 12 (Delayed) (U.P.)

—The story of how a British airborne unit annihilated a German regiment during an early phase of the invasion of France.

Stretcher-bearers wriggled forward and dragged wounded men away, but never showed themselves against the skyline.

Now the enemy was gaining confidence from the stillness. Smelling no danger, his loping advances were longer, his periods flat on the ground of only a few seconds duration. He came on fast, kept on coming until he was about 100 yards away. Then at a prearranged signal every automatic weapon, every rifle in the paratroops' line opened up. It was a roar that set your teeth chattering with shock.

You suddenly saw the Germans grimacing wildly clutching their bodies, throwing up their hands, then falling by the dozens into the corn. Then they all flung themselves down and the British paratroops continued their fire.

A rain of bullets surged across these 100 yards of French farm land and battered into the huddles on the grass. The earth was scuffed up in showers of corn and went down as if under a flail. But the Germans weren't beaten yet. One of their officers rose to his feet and called to his men, and those still not wounded charged once more. This time the paratroops held their fire even longer, and it was 25 to 30 yards now when the small arms barrage hit the enemy.

With cool, superb and absolute discipline, fingers squeezed triggers almost simultaneously, and down in writhing heaps went the Germans again. And now the remnants who remained alive turned and began to flee.

Bullets chased them across the field as they raced for the woods. But only a few made that shelter, for now the shells and mortars came into play and plastered a river of steel between the enemy and the sanctuary for which he was racing.

By 1 o'clock it was all over, and the dropping zone was littered not only with gliders and containers but with hundreds of enemy dead and enemy wounded.

Back in the woods those Nazi troops who had made it were joined by reinforcements, and there, among green shadows, they re-formed and planned how to get out.

But they were not to be given the chance. All through the woods hidden in trees, ditches, and slit trenches the camouflaged British paratroops were waiting for them. Around 4 o'clock a squadron of Sherman tanks rumbled up to where most of the Germans were concentrated and poured a five-minute barrage from their big guns into the trees.

The Germans turned and began to retreat. Their retreat was the wrong way for them and once more it was massacre. Sten-gun bullets hit them from such range that they were torn to pieces. The paratroopers could touch their victims as they opened fire.

The terrified Germans threw up their hands and tried to surrender. If they were in time they were allowed to. Those who waited until too late got a burst that flung them to the ground. Only a few snipers were left by Saturday evening, and their fire was sporadic.

I went into the woods to see the flotsam and jetsam this short but bloody war had left. Everywhere was death—Nazi death. At least 400 had been killed and nearly 2,000 made prisoners. And in breaking the whole of a German regiment and capturing its commander, British losses did not number over 50 all told, including wounded.

German prisoners on their way back to a Prisoners of War cage pass advancing British airborne troops, who are carrying equipment in collapsible trailer shown at lower right.

THE F

—An Undergrou

Pictures from the Film "Fighting Men of the Maquis."

Among the Maquis, firearms of any kind have been so scarce and so hard to obtain that the penalty for loss was death. Note the number of unarmed men in above picture.

These young Frenchmen joined the Maquis to resist the criminal laws of deportation. In taking these pictures the photographer did not have time for lighting effects or timing. They are meant to show the spirit and discipline of boys who prefer the Maquis' dangerous life and innumerable daily risks to imprisonment in German factories.

AS the day of invasion approached and French liberation grew nearer, French resistance took on a new aspect. For several months prior to the Allied landings on the coast of France, organized patriot guerrillas openly fought the German army and its accomplices—the French Militia, and the Vichy Gardes Mobiles.

The French Militia is a Nazi-directed police organization under the direction of Joseph Darnand, Minister of the Interior in the Vichy cabinet. It was especially created to combat French patriots or to denounce them to the Gestapo. It is armed by the Germans and takes its orders from them.

The Gardes Mobiles is a French police organization which existed before Vichy came to power. It takes its orders from Vichy, and it is one of the most hated police organizations in France on account of its activities against those Frenchmen who have refused to abandon the fight against the Nazis.

In defiance of these Nazi controlled collaborationists, there gradually developed a patriot underground organization known as the Maquis, which recruited patriots of all political parties—men who refused to bend beneath the Nazi heel and become slaves in German industry. Many recruits were ex-army officers of the defunct Vichy armistice forces. All had one common enemy and one common goal.

The name "maquis" was borrowed from Corsica where it designates a kind of very thick underbrush in which Corsicans used to hide after they had participated in some act of *vendetta*—family feuds. During the years of Nazi occupation French patriots have had to hide away in the mountain caves or in the snows of the Alps and the Pyrenees to escape death or deportation by the Germans, and to organize as an army—the French Underground Army which is now playing an important rôle in Allied operations in France.

The Maquis is divided into numerous groups, as a rule small in number in order to facilitate the problem of supplies both in food and arms. In some cases a group may be 200 strong. Each group has had to establish its own defense and warning system, but often when necessary several groups have been called to act together. These groups have been scattered all over France and their liaison and organization were one of the most difficult tasks the leaders of the French Under ground had to assume.

A man became a member of the Maquis only after going through a specialized course involving a very high moral training, for any member of the Maquis who turned out to be a stool pigeon would endanger the lives of his companions. Another reason for that

★For obvious reasons, neither the source of this material nor the name of the author can be divulged at this time. Information contained, however, is authentic.

FRENCH MAQUIS*

ground Army Prepares for Conquest and Liberation

particular training was that once captured by the Gestapo, the chances of being tortured to reveal information before being put to death were—and still are—very great. Every day incredible tales of the torture of men as well as women have come out of France through sincere and reliable sources.

Instructions to the Maquis

Admission to the Maquis entailed severe tests of character, endurance, courage and loyalty. Following are excerpts taken from the instructions regarding requirements:

"Every man who applies to join one of the united resistance underground groups is considered to be . . . a volunteer member of the guerrilla forces and an auxiliary belonging to the French army.

"He agrees to submit to the very strict discipline of the underground organization, and to obey without question all orders received. . . .

"He must give up any attempt to communicate with his family or his friends until after the war. He must keep absolutely secret the location of the hide-outs, the identity of his leaders and his comrades. He knows that any infringement of this order will be punished by death. . . .

". . . He will respect the private property and the lives of civilians—whether they are French, Allied, or neutrals; not only because the existence of the underground movement depends upon good relations being maintained with the population, but also because the men who have joined the underground are the élite of the nation and they should set everyone an example and make proof of bravery and honesty, which are the chief traits of real Frenchmen.

"In order to feed and clothe members of the underground, we may be compelled to order the looting of shops, of the Vichy police stores, and even food and clothing from the depots where the societies for National Relief and Prisoners' Aid are keeping reserves.

"Such raids will be limited to the minimum and made only when it is absolutely unavoidable because our men must at all cost be kept alive. They will be performed by our best men who have been chosen with particular care, because of their high moral character. As soon as we have enough weapons, we shall carry out such operations against the stores of the army of occupation exclusively.

"It goes without saying that no religious or political distinction is made when admitting members. Catholics, Protestants, Moslems, Jews, or atheists, royalists, radicals, socialists, or communists – all Frenchmen who want to fight against our common enemy are welcome in our ranks. Each volunteer promises to respect the opinions and the beliefs of his comrades, tolerance being one of the finest virtues of Frenchmen. Only Hitler's flunkeys have tried to invent fanaticism in France. Not only will any man in the underground respect the opinions and beliefs of his comrades, but he will be a devoted friend to them, a true brother-in-arms. The safety of all depends on this, and it is the only thing which makes existence bearable in resistance hide-outs.

". . . No wounded man must ever be abandoned. The dead must be carried off and given decent burial whenever this is humanly possible.

"A volunteer in the underground is furnished with weapons only when his powers of endurance, his training and his obedience to discipline have proved him worthy of receiving any of our very rare, and therefore very precious, guns. He must take the greatest care of a gun, keep it scrupulously clean, have it within reach, or in safe hands except when he has to entrust it to the camp gunsmith. The losing of a weapon will be punished by death. This penalty is

Instructions to the Underground on D Day

LONDON, June 8 (U.P.)—Allied orders to the French underground went out yesterday by courier plane and radio broadcast for the sabotage of German communications and the immediate evacuation of towns about to be attacked by Allied bombers.

Other instructions were broadcast as "personal messages" to leaders of French resistance groups, in codes which they alone could understand, such as—"Jacques LaPorte please immediately deliver your fresh cakes to grandmother in Paris"; "Madeleine the flowers which you planted have wilted," and "Roger your laundry will be ready Tuesday."

One immediate result, according to a Vichy report reaching here by way of Stockholm, was the blowing up at 42 points of the Lacluse-Nantua-Bellegarde Railway by French Partisans. This is one of the routes over which German troops in Italy and Southeastern France might be sent to the French Atlantic or Channel Coasts.

Demonstrations were staged by French patriots in Paris, Lyon, Marseille and other cities, featured by street singing of the French National Anthem. German authorities, fearful of using German soldiers against the crowds, called out the Vichy militia to quell the manifestations.

harsh, but obligatory for the safeguarding of everyone.

"A volunteer must keep his belongings and his person as clean as possible. His physical and moral health depend on this, and they are valuable for the Nation's salvation. Every member of the underground is an enemy of Marshal Pétain and the traitors who do his bidding.

"France is alive and will continue to live."

Arms and Operations

In spite of its increasing potentiality as a war factor in the liberation, the Maquis had great difficulty getting even partially armed. At first it had to capture its arms from the Vichy stocks, the gendarmes', or even the German army stocks or personnel. In the regions which were under Italian occupation, the Maquis captured also some of the Italian army's weapons. The possession of arms from several armies, of all caliber, and of practically all descriptions, made a genuine puzzle of the problem of supplying armament to the Maquis. Later, arms came from the Allies—arms of a type more convenient to hide and more properly adapted to the guerrilla warfare—the principal rôle to be played by the Maquis.

Living in the country, the Maquis found it necessary to rely for its food supplies on the local production—or on the local German or Vichy stocks. Often one of the first operations of the Maquis was to raid a certain "Chantier de Jeunesse" depot to obtain shoes or food. The men began early to apply what they learned in their camps—security, warning system, liaison, etc. If the first operation proved successful, the next raid was likely to be directed at a German ammunitions depot.

Some of the Maquis group may have received orders to blow up a bridge or a railway line, or to derail a train of German soldiers on leave. The Vichy and the Paris radios have often reported these activities. Sometimes also the Maquis has been directed to destroy factories working for the Reich—especially electrical plants—or, in the Alps, to blow up certain water pipes feeding the big hydro-electric plants, or destroy pylons supporting electric lines and thus make short circuits which have often caused damage to the power plants.

The Maquis as an Army

The Maquis has occupied certain regions of France of considerable importance. Long before the Allied invasion, the German staff realized that fact and ordered operations against these camps of the Maquis. To wipe out the Maquis completely, the German General Staff estimated at one time that it would require from three to five divisions. An account of a typical fight which occurred in the spring of 1944 between the German army and the Maquis illustrates this point.

In the course of the second half of March the patriots, entrenched on the Glières Plateau in the Province of Haute-Savoie, were attacked by German troops in considerable strength. The men of the Maquis were finally overwhelmed by the attacking force after inflicting upon the Germans considerable losses. The fighting started early in February when the militia was ordered to clean up the region of the plateau. These operations,

Thousands of the Maquis have endured hardships and loneliness and braved attacks by the Vichy Militia and the Germans. Reasons of supply and security have necessitated that this great Underground Army train in small groups.

carried out on orders from Darnand, were a total failure.

During one of the first engagements, on February 12th, near Petit Bornand, a group of about 50 Gardes Mobiles from Chateauroux and the Cevennes region had to fall back with the loss of 11 men, including their commanding officer. This setback suffered by Colonel Lelong's troops was made complete in the engagement of March 13, when 200 soldiers of the Maquis under the command of Lieutenant Morel, a former instructor in the Military School of St. Cyr, came down from the Glières Plateau, attacked the post of the Gardes Mobiles at Entremonts, and took 60 prisoners, including two officers.

Thereupon the German troops, which had surrounded the Glières Plateau several days before, were ordered to attack. The troops of the Maquis, numbering 500 men, were commanded by officers and noncommissioned officers, most of whom had belonged to the 27th Battalion of the Chasseurs Alpins. The German troops engaged in these operations consisted of five battalions of Alpine infantry, two battalions of SS, two groups of heavy artillery, one group of mountain artillery, 10 light tanks, as well as antitank and antiaircraft equipment. The German aviation took an active part in the operations.

In spite of the enormous difference in numbers and equipment, the resistance of the patriots lasted two weeks. For ten days the plateau was subjected to an intense bombardment by enemy aviation and artillery. On the eleventh day the defenders of the stronghold of Glières, who had fallen back to new positions upon orders from their officers, tried to break through the enemy lines. Simultaneously, a detachment commanded by Lieutenant Jérome attempted to join forces with the surrounded patriots by piercing the enemy lines from the outside. In the course of this bold diversion maneuver Lieutenant Jérome and all his men were killed.

The cost of this victory to the Germans was 400 killed and 300 injured. The defenders of the Glières Plateau shot down two enemy planes. As late as April 4th the fighting continued in the prohibited zone.

This feat of arms, worthy of French military tradition, ought to be known by the free peoples of the world. A second Bir Hakeim, the battle on the Glières Plateau bears witness of the will of France to maintain the tradition of French military grandeur. The enemy himself had to pay homage to the epic fighting spirit of these badly armed heroes.

The losses of the Maquis in this operation were estimated for the time being at 100 killed and 150 prisoners. The officers inspired their men by their gallant fight at the head of their troops. The proportion of losses among the officers was very great. The retreat was accomplished in perfect order and discipline. One of the German officers who participated in this action is quoted as having said: "These men are full of fighting spirit; as to the Militia, they are no damn good!"

Killers to the cannon and killers to the knife,
quick to the fight!
Saboteurs, watch your load, it's packed with
dynamite!
For we are the Underground, we'll break the
prison seals,
With hunger at our throats and hatred at our
heels.
—French Underground Marching Song.

* * *

Traffic in France Stalled By Interior Army Sabotage

Allied Supreme Headquarters, London, July 6 (U.P.) – Lt. General Joseph Pierre Koenig's French Forces of the Interior, estimated at 500,000 armed men, have sabotaged German communications in France so completely that the Allied air force now is concentrating on fewer targets, and the Nazis are forced to channelize their movement into the battle zone, spokesmen disclosed tonight.

(General Koenig, fighting French hero of the North African front, has been named officially by Supreme Allied Headquarters to command the resistance forces of French patriots.)

A special communiqué said that five French departments—Vercors, Gers, Doubs, Ain, and Ardeche—had been liberated.

A spokesman interpreted this to mean that the sectors were under Maquis control, and that no enemy movements through these areas were possible unless heavily escorted.

A French spokesman said traffic was entirely stalled in Brittany in northern France, in the Pyrenees-Lyon area, and on nine main routes, including the Calais-Reich and Paris-Belfort lines, which are being cut an average of two to five times daily.

A spokesman said it now takes a German division moving from Russia to Normandy three times longer to travel the 300 miles from the Franco-German frontier to the battle zone than it does for it to come the 1000 miles from Russia to the border.

Vital Role of Soviet

by Colonel I. Pronin, Red Army

DURING three years of war Soviet cavalry, widely employed on *all* battlefronts, has proved that it is still *the most effective branch* of an army which has retained all of its former fighting qualities and developed new ones. Cavalry has proved that it could conduct large scale independent operations and carry out vital operational tasks. This mobile branch of the service is just as maneuverable at any time of the year and in every kind of weather.

Throughout various stages of the war, the Soviet command has made good use of cavalry armed with the most up-to-date weapons.

Covering Withdrawals—Fall 1941-Spring 1942

During initial stages of the campaign, when the enemy's armored divisions were pushing eastward, the mission of cavalry, as well as that of all other branches of the Red Army, was to wear down the enemy. Utilizing the utmost of its maneuverability, cavalry dealt blows on the flanks and rear of enemy groupings, secured the flanks and formed links within the armies and fronts, and covered the Red Army during its withdrawal to the east.

Cavalry was also most effective in the German rear where, by disrupting communications and destroying command posts, enemy troop movements and dispositions were made very difficult.

During these early operations, Soviet cavalrymen displayed exceptional endurance and utter contempt for danger. Cavalry units under the command of Generals Belov, Dovator, and Kruchenkin particularly distinguished themselves at that time.

Operations of the II Cavalry Corps against groupings of the enemy near the town of Balta serve as a good illustration of the gallantry of Soviet cavalry in the early phases of the war. Mobile German units had occupied the town of Balta and pushed on to Pervomaisk. By a forced march the Soviet cavalry corps arrived in the

*By cable to The Cavalry Journal from War Department U.S.S.R., Moscow, July 4, 1944.

Left: **A machine gun installed on a famous Russian "*tachanka*" supports a cavalry charge. Note saber.**

Below: **Commander of a cavalry unit gives combat assignments to junior commanders of his group.**

Sovfotos

t Cavalry*

Balta sector and, by immediately launching a surprise attack on the main enemy grouping, routed the 293d and 197th Infantry Divisions and the 19th Motorized Division. The corps captured Balta and liquidated a threat to Pervomaisk.

During the temporary setback in the spring of 1942 operations of the V Cavalry Corps, which covered the withdrawal of a Soviet Army in the Izyumbarvenkov direction, is also worthy of note. By active defense on a wide front between May 17th and 27th, the corps covered the withdrawal of an army to the left bank of the northern Donets River and bore the brunt of the fighting against a superior enemy force comprising two tank and three infantry divisions. By skilful maneuvering in this action cavalry enabled the Soviet units to take up new positions and prevented the Germans from crossing to the eastern bank of the northern Donets, which was the objective of the enemy's main forces. During these 10 days of fighting, Soviet cavalry inflicted heavy casualties on the foe. In killed alone the Germans lost 5,000 soldiers and officers.

Offensive Tactics—Winter 1942-1943

The rout of the German forces, begun on the approaches to Moscow in the winter of 1941, was followed in 1942-43 by the annihilation of German armies on the approaches to Stalingrad and in the Caucasus. At that time, the tactics of cavalry units, like those of the entire Red Army, changed completely. Soviet armies on many fronts passed over to the offensive. The Germans, under the onslaught of Soviet troops began to retreat. Clinging tenaciously to every favorable position, the Germans fought for every yard of Soviet soil that they were forced to relinquish.

When the Red Army assumed the offensive in the fall of 1942 efforts of Soviet cavalry were directed toward (1) developing any break-through in the main direction and (2) making *raids** behind the enemy front lines. In coördination with tanks, motorized infantry and other units, cavalry encircled and exterminated thousands of enemy troops. It pursued the foe during his retreat, encircled, and wiped out or made prisoners whole units of German soldiers.

*The word *raid,* descriptive of cavalry tactics in the American Civil War, was borrowed by the Russians, who had no equivalent term. The Russians also borrowed the tactics.

On 6 January 1943 the VI Cavalry Corps entered a gap south of Rossosh in the region of Kantemirovka. Its assignment was to push on to Valuiki, capture the railway junction of Urazovo, prevent Germans from bringing up reserves from the rear, and cut off any path of retreat for German troops in the sector attacked by Soviet tanks.

In four days the corps advanced 180 kilometers, took Valuiki and Urazovo, inflicted heavy losses on the enemy, and captured rich booty. Later in an engagement with the enemy's reserves, the Soviet commanding general ordered an infantry division, under his command as reinforcements, to hold Valiuki, and with his main force he started out in pursuit of the retreating Italian Alpine Corps. Cavalrymen cut down more than 2,000 of the enemy, and took prisoner as many as 14,000 soldiers and officers, including two generals.

Offensive, 1943-44

In the winter of 1943-44 the IV and V Cavalry Corps pursued Germans from Taganrog down to the Dnepr and routed and prevented them from establishing themselves on the river. The cavalrymen then forced the water barrier, and on the western bank of the Dnepr prepared positions for further action.

During the 1944 spring offensive the V Guards Cavalry Corps took part in the encirclement and annihilation of the German grouping in the region of Korsun-Shevchenkovsky. Operating on an outer circle, a ring of cavalrymen engaged enemy reserves striving to break through to their encircled troops, and in so doing played an important part in the successful outcome of the operations in which 10 divisions and one brigade of German armor and infantry were surrounded and liquidated.

Outstanding Rôle of Cavalry

Not a single big scale operation has been undertaken on the Soviet-German front without active participation of cavalry. Mounted forces have consistently attacked German flanks and rear and helped materially in the encirclement and rout of the enemy. One word, "Cossack," is enough to cause fear and create confusion in any enemy camp.

The experience of this war proves that despite various new weapons of warfare, Soviet cavalry is a powerful force for developing a successful offensive and is highly effective in defense.

Allied military men recognize the Russian offensive as the biggest thing that has happened in the European war. In the number of men and machines involved, in the length of line and speed of advance, in the size of Nazi losses, and in potential, this offensive is historic. While Americans and Britons are naturally more interested in the progress of their own forces on the Normandy front, they are not unaware of the larger front in eastern Europe.— **Washington News,** ***July 6, 1944.***

Need

by Maj

Life Photo by Robert Capa.

A mule pack train winds its way through the mountains of Southern Italy. Such trains were the only means of supply to U. S. foot soldiers driving Germans from dug-in mountain position.

Terrain

DURING the period from September to December, 1943, the U. S. VI Corps of the Allied Fifth Army advanced northwest from the Salerno Beachhead, roughly within the zone left (west) boundary: Battipaglia—Nola—Maddaloni—Caserta—Mignano; right (east) boundary: San Gregorio—Andretta—Highway 91—Melito—Benevento—San Giuliano—Isernia—Pizzono.

The area was mountainous throughout. Elevations in the southern part, on either side of the Sele and Tanagro Rivers, averaged 200 meters, and these increased to as much as 1500 meters in the central portion. In sections of the northern part the heights rose to more than 2000 meters.

At all times the mountains proved to be serious military obstacles to the advance of the corps, which had the additional problem of negotiating the Calore and Volturno Rivers. The Volturno had to be crossed twice in each of two major operations.

Roads were few, and throughout the entire advance the corps was limited to one main road with an occasional auxiliary road available for short intervals. All roads traversed mountainous country and had numerous side-hill cuts and severe grades. Traffic alongside or parallel the roads was impossible.

★Commander of the U. S. VI Corps in Southern Italy, during fall and winter, 1943-1944.

"Motors were tied to the roads by the inaccessible terrain. Horses and men on foot were the only things that could move."

The ridge lines did not follow any general direction, but ran to excessive heights, with the conformation such that the more severe slope was always presented to the advancing troops. The defending German force was in possession of dominant terrain throughout the entire zone of advance.

The retreating Germans, therefore, always had the advantage of commanding observation.

The terrain decidedly favored the defender and was entirely unsuited for motorized or mechanized warfare.

Enemy Tactics

The German plan was to accomplish the maximum possible delay preparatory to defending a strong natural line south of Rome, and thus prevent the seizure of that Axis capital by Allied forces. There is no doubt but that the German command intended to make the first stand behind the line formed by the Volturno and Calore Rivers. The area between the Sele and Tanagro Rivers on the south and this defensive position on the north was ideal for delaying action. The entire section was mountainous throughout with elevations in the southern part averaging 200 meters. Peaks rose as high as 1700 meters in the west central area and averaged approximately 600 meters along Highway No. 7.

The Germans, fighting savagely and expertly to delay our advance, proved especially efficient in defensive warfare, and their selection of ground and use of weapons for defensive purposes forced our admiration. All bridges were blown and roads destroyed. Streets in towns were blocked with rubble. Mines were sown in great numbers to cover possible by-passes, and the enemy's fire power was always so placed as to prevent the removal of obstacles by direct attack. Of necessity the enemy troops had to be removed before the engineering work, allowing a further advance, could be accom-

d for Animals in Italy

by Major General John P. Lucas*

plished. This required infantry maneuver over rough and difficult country, which consumed many hours of time and became heartbreaking from its repetition. The enemy, of course, had the advantage of good communications, and little could be done to interrupt them. Air power was of scant value against small point targets, because nothing except infantry could move off the roads, and German infantry could march as fast and as far as could American.

In spite of the many obstacles to its advance, the VI Corps reached the line of the Volturno–Calore Rivers before the German forces were prepared for an all-out defense, and, after a careful reconnaissance, made a successful crossing on a broad front.

The area between the line of the Volturno and Calore Rivers on the south and the new line on the north was even more favorable for delay. Except for the broad Volturno Valley, the area was highly mountainous with elevations in some localities running to more than 2000 meters. Again, the advance, though painfully slow, was steady, and the VI Corps once more arrived on the Volturno and after forcing a crossing, seized Venafro, Montaquila, and Colli. This action pierced a defensive line which the enemy had intended to hold until April.

U. S. Signal Corps Photos

This blown bridge over the Volturno, south of Venafro, is quite typical of enemy demolitions in Southern Italy.

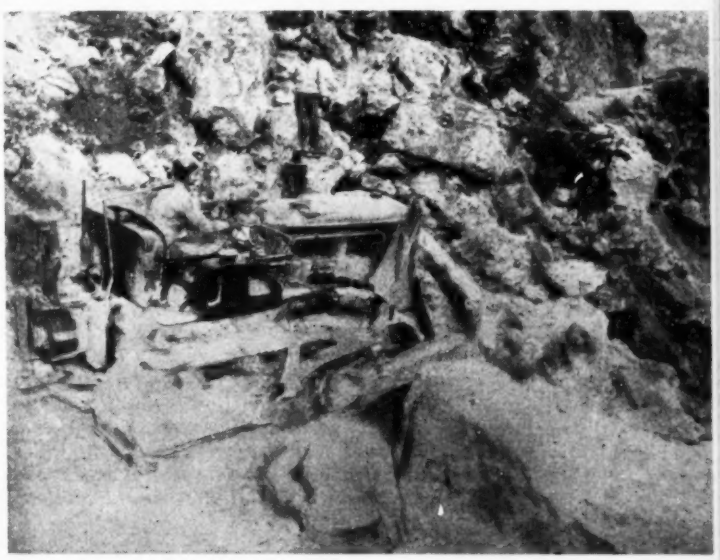
The physical condition of the troops, which had gone beyond the point of exhaustion, and the inability of other units to advance on the flanks, made exploitation of this success impossible.

The tactics employed by the enemy to accomplish sufficient delay to allow organization of each new defense line were very simple. As has been outlined, the Germans would seize and occupy dominating ground, which furnished them excellent observation, and, through well planned and well executed demolitions, they would then create an effective obstacle. This was generally over a stream at the site of a bridge or at a precipitous section of the road where the steep embankment could profitably be blown, and there seemed to be a countless number of locations where such demolitions were possible. Then, the block thus created was covered by accurate artillery and automatic weapons fire, while the defending enemy troops manning these weapons prepared to stay in position until the last possible moment.

Need for Horse Cavalry

Before an obstacle of the kind invariably left by the Germans could be cleared or repaired by engineers, it was necessary for the infantry to move over extremely difficult terrain in order to outflank the hostile resistance. The infantry accomplished wonders, and I am convinced that no other foot soldiers in the world can equal the stamina of the American doughboy. However, their progress was necessarily slow, the work tedious, and it soon became obvious that, *unless a highly mobile force could encircle the withdrawing enemy, it*

A bulldozer clears rock from blown road near Colli. Road can be seen in upper right corner of picture. Blasts along precipitous road banks retarded all road-bound traffic.



would be impossible to kill him in any really decisive numbers.

During these operations I made strenuous efforts to get at least a regiment of horse cavalry. There was a desperate need for some type of unit that could penetrate cross-country and get through the difficult mountains at a decidedly faster rate than the infantry. *Motors were tied to the roads by the inaccessible terrain. Horses and men on foot were the only things that could move.* I am convinced that if I could have gotten some type of troops behind the Germans to work on their lines of communication in order to execute demolitions in their rear, the results in southern Italy might well have been decisive.*

Mounted units, schooled in the American cavalry doctrine, would have been the perfect solution. Hardened and well trained horsemen possessing mobility and fire power, could have infiltrated through the extended German lines, encircled the delaying detachments, and would have captured or destroyed those elements. This would have permitted the maintenance of pressure on the retreating enemy main forces by our infantry divisions in their direct pursuit and would not have given the Germans sufficient time to prepare strong defensive positions to the north. As it was, there was no cavalry available. There were only men on foot—and German infantry withdrawing on good roads could move more rapidly than American infantry could move over rugged and mountainous terrain.

Animals Available

To insure the success of the infantry during the operations against the Germans in southern Italy, it was found that pack transportation was absolutely essential. It is something that will always be needed in war, because wars are never fought on favorable ter-

*See articles from Russia, "Vital Rôle of Soviet Cavalry" and "On the Road to Odessa," Pages 14 and 48.

Cavalry Forges Ahead On Soviet Northern Front

MOSCOW, June 30. By M. S. Handler, United Press Staff Correspondent. — Marshal Rokossovsky's First White Russian Army poured across the Berezina River, last natural defense barrier before Minsk.

Cavalry, leading the pell-mell pursuit of the disorganized enemy legions, forged ahead to a point 30 miles southwest of Minsk in a drive that raised a threat of encirclement against the White Russian capital, next obstacle on the ancient invasion route to Warsaw and Berlin.

The Soviet High Command reported the Germans were fleeing so rapidly and in such disorder that they had no time to man their intermediate defense lines. One Russian general writing of the scene said, "No army in the world has ever suffered such defeats as has befallen the Wehrmacht. *During the worst days of 1941, we did not live through one-tenth of what the Germans are experiencing today."*

LONDON, July 3 — Associated Press. From 200,000 to 240,000 German defenders of Minsk were clamped in a steel vise today as Russian columns, plunging into old Poland at the rate of 40 miles a day, snapped their two railway escape routes and in a frontal assault swept to within 12½ miles of the city. . . .

Premier Marshal Stalin, in orders of the day, sent his congratulations to General Ivan D. Cherniakhovsky, whose troops cut the railway on the northwest, and Marshal Konstantin K. Rokossovsky, who struck from the southwest.

Cherniakhovsky's cavalry pressed on 10 miles into Poland and captured Wilejka, 47 miles northwest of Minsk, and 67 miles southeast of Wilno.

Stalin said the attacks from north and south were launched simultaneously, and cavalry, tanks and infantry dealt a succession of blows in the south.

The spearheads of tank and Cossacks by-passing Minsk left open to the Germans only the desolate and difficult marshland for a retreat to the next lateral rail junction at Lida, 120 miles west.

MOSCOW, July 6—Associated Press. The Red Army unleashed a great new offensive today in the direction of Pinsk and Brest-Litovsk, while vanguards of General Ivan Cherniakhovsky's Third White Russian Army were reported within 45 miles of Wilno, gateway to the Northern Baltic republics. . . . General Cherniakhovsky's advance on Wilno from the southeast carried through Smorgonie, where his cavalry units were only 140 miles from the borders of East Prussia.

MOSCOW, July 12. By M. S. Handler, United Press Staff Correspondent. — The Stockholm Aftontidningen *reported the "biggest state of alarm" in East Prussia with Nazi authorities closing the frontiers and mining the approaches.*

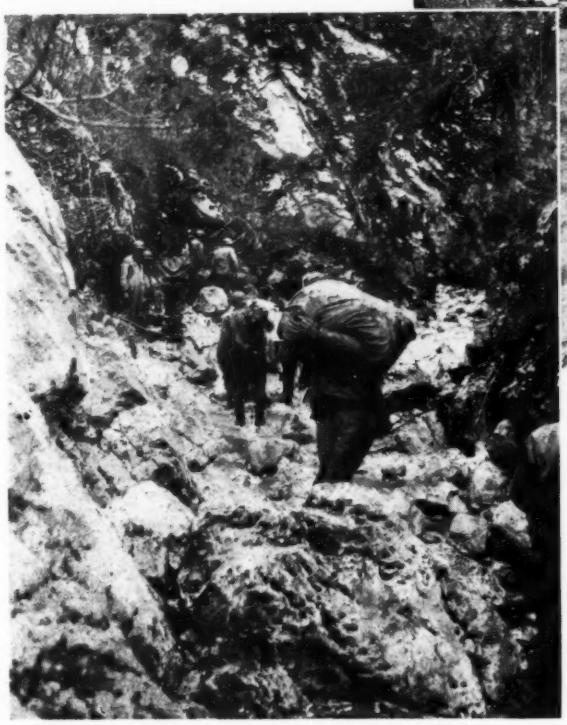
Russian cavalry and infantry pushed along a secondary road through the Pripet Marshes for an imminent attack on Pinsk and threatened the escape route of other German forces falling back along the Gomel-Pinsk railway from Lovcha, 21 miles northeast of Pinsk, under heavy attack by another Russian force.

LONDON, July 14—The German High Command today acknowledged the loss of Pinsk, last big defense bastion of the Pripet Marshes, and the German Transocean News Agency reported that the Russians had broken into Grodno, main bastion on the approaches to East Prussia. The fall of Pinsk indicated Marshal Rokossovsky had completed the conquest of the swampland and was ready for a push 100 miles west against Brest-Litovsk on the road to Warsaw and Berlin.

Right: Photo shows a stretch of the main supply road of the VI Corps in the Capriati sector in southern Italy. Roads were churned to slush.

U. S. soldiers pack rations along a stream bed in the Demanio Area.

Signal Corps Photos



rain. In some cases pack artillery was used, but there was never enough of it to rely on to any great extent.

There may have been some American mules in southern Italy, but I do not remember seeing them. The only ones that I saw were the little Italian mules, which can carry only a comparatively light load. Despite their small size and the fact that in many instances time did not permit proper conditioning, these animals proved to be *most valuable*. Of course, the number available was entirely insufficient.

Personnel

In southern Italy the Allied command had considerable difficulty in finding enlisted personnel who understood animals and could take care of them. It does not take very long to teach a man to pack, but very few people have the background and experience necessary for the proper care of animals. On one occasion, I asked for some men of this type from the United States and requested that they be flown over.

Equipment

Another difficulty was the securing of sufficient and suitable equipment. North Africa, Sicily, and Italy were combed and a varied and peculiar assortment of pack equipment was obtained. There were a few Phillips packs, together with many different types of French and Italian pack saddles. With inexperienced pack personnel, poorly conditioned animals, and lack of uniformity of equipment, the divisions were constantly pressed to keep the pack trains functioning.

Forage

The matter of forage was a constant headache. It was entirely inadequate. Some grain of a very poor quality was picked up in North Africa and Italy, but there was no central source where hay could be obtained. It was necessary to cover all outlying districts in order to requisition forage in an attempt to fill the needs. Of course, grazing was resorted to whenever possible. Under ordinary conditions, forage was transported by truck. No attempt was or should be made to carry it by animal train.

Future Operations

It is my personal opinion, aside from any appreciation of the value that American trained and equipped cavalry might have under conditions such as experienced in Italy, that each infantry division operating in mountainous or rugged terrain should have available a train of 500 mules. These should be divided into ordinary pack trains of approximately 50 animals each. There will be considerable losses among them, not only from enemy fire but from exhaustion, so there should be some method of replacement for animals. Also, in order to reduce wastage, there should be a veterinary set-up of some kind. Possibly, a Veterinary Platoon, as an organic part of the pack train, should be included in the Table of Organization.

A TD Battalion at A

As told by Captain P. C. Meachem to Lieutenant L. R. Barnhill*

"THIS is it," came the warning over the battered field phone in the cave-like dugout of the tank destroyer reconnaissance company command post. It was 0500 hours on the icy cold morning of 15 February.

The terse message signaled the opening of the third and fiercest German armored attack upon the Allied positions on the Anzio beachhead established 22 January. It was also the last offensive threat by the Germans, before the Allies shattered the steel ring about the beachhead in late May and surged northward to engulf Rome.

For weeks the Germans had been stepping up the tempo of their artillery fire on the beachhead. Increased activity of German armor had been observed north of the Allied lines. Other information had confirmed reports that the enemy was preparing for a major "show."

Within seconds after the first warning flash, reports from OP's were pouring into the tank destroyer reconnaissance command post. Men in the OP's were giving the location of advancing tanks and troops and calling for artillery fire. The attack was underway.

For three days the action thundered in and around the Carroceta sector. For three days the tank destroyer battalion held fast, bearing the brunt of the armored thrust. After the inevitable smoke and dust of battle had cleared and the last German tank had withdrawn, the tank destroyer battalion racked up official credit for smashing 25 Jerry tanks and stopping dead the most determined of all the Panzer efforts to crush the beachhead forces. It was not a one-sided fight. The tank destroyers lost, too—in guns and men—but not to the same wasteful extent as the Germans.

Arrival at Anzio

When the tank destroyer battalion landed at Anzio at 0200 hours on 28 January, six days after the initial landing of Allied troops—the beach was reassuringly quiet. The battalion rolled off LST's and moved into an assigned bivouac area just as if it were on a field problem in the States. Everyone was careful, however, to maintain at least 100 yards' dispersion between vehicles. It was known from experience what havoc German bombers could wreak among bunched vehicles.

Even before all of the vehicles were de-waterproofed and camouflaged, the reconnaissance company was committed to road reconnaissance.

Just before the battalion left Naples all half-tracks had been replaced with M8's and M20's, and at Anzio the men were using them in combat for the first time. It was soon learned from actual tests on the Anzio terrain that with tire chains the newly acquired wheeled vehicles could traverse just as difficult routes as could the half-tracks. This did not mean much on Anzio. Even the full-tracks were confined for the most part to highways, because of the solid network of drainage canals slicing across the beachhead sector.

For two days two platoons of the reconnaissance company were on continuous road reconnaissance. One platoon ran out all of the roads extending left of the main highway which ran through the beachhead from Anzio to Carroceta, and the other platoon did the same on the right. Notes were made on class of roads, blown bridges, fords, possible points for by-passes, and weight limits of existing bridges. This information was placed on the battalion situation map and disseminated throughout the battalion. It also was passed on to the 1st Armored Division.

Digging In

Because of the high water table on the low, flat area, the matter of digging in posed a new problem for tank destroyer units, accustomed to digging as deep as they wished on the rocky mountain slopes south of Cassino without reaching water. At Anzio the crews struck water within two and three feet of the surface, so burrowing tactics had to be revised. Regular caves were built to house two or four men. Up-ended three-inch ammunition boxes filled with sand provided solid walls. Timbers and boards gathered from shell-wrecked buildings in Anzio provided roof supports. On top of these the men placed canvas and a layer of dirt. This provided a shelter that protected the crews from everything except a direct hit.

The reconnaissance company CP was arranged in a similar fashion. The CP tent was placed in a hole two or three feet deep, depending upon the water level. A row of up-ended, three-inch ammunition boxes filled with sand was placed around the tent. Another row of ammo boxes, laid on their sides, was placed on top of the up-ended boxes. This brought the protective wall to the height of the CP tent. A camouflage net was then thrown over both the tent and the wall of boxes.

Light was provided by a sealed beam automobile headlight connected to a 12-volt battery, cannibalized from a wrecked vehicle. A member of the maintenance section kept the battery charged.

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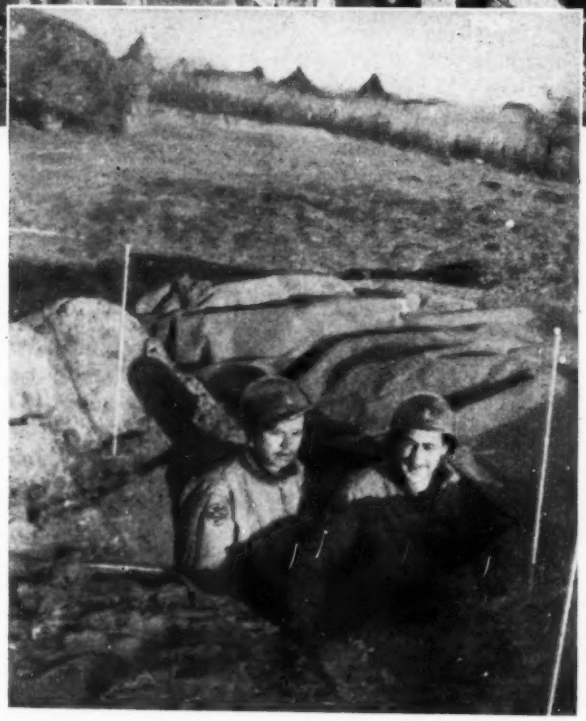
*Commander, Reconnaissance Company, Tank Destroyer Battalion on the Anzio beachhead, Italy.

tAnzio

Signal Corps Photo

Above: **Tank destroyers, unloaded from an LST in the Anzio harbor, pass ruins on the way to assembly point.**



Left: **Entrance to a foxhole at Anzio. Note flat coverless terrain. Destroyer in background is covered by camouflage net. After the first few days, all destroyers dug in.**

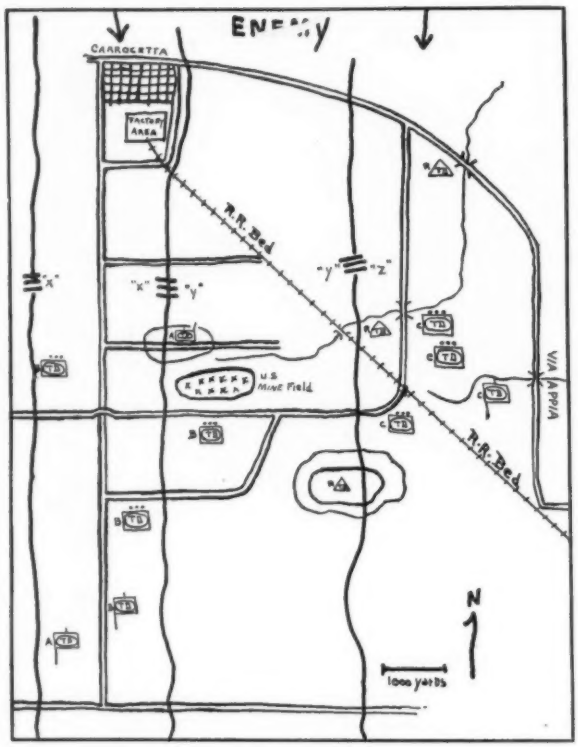
Direct wire communication ran from the reconnaissance CP to battalion headquarters. Radio communications in the CP was provided through 608's on two M20's dug in on each side of the CP tent. One of the radios was in continuous operation.

Everything on the beachhead was dug in, even the M8's and M20's. The men dug the self-propelled guns down to the fenders and then used sandbags to build revetments up level with the tops of the vehicles. A hole was dug under the vehicle for a two-man shelter. Entrance was gained through a tunnel extending under the rear of the vehicle.

That was the setup during the first quiet days on Anzio. In the rear there were even a couple of pyramidal tents heated by Sibley stoves. Those two tents were great morale boosters. Men coming off night patrols changed into dry clothes there and ate some warm food before turning in. It was cold, wet, and miserable during most of the time spent on the beachhead, and any possible comfort was a luxury.

Defensive Positions

Soon after the TD battalion arrived on the beachhead, two of the gun companies and two of the reconnaissance platoons were committed to defensive positions. The other gun company and reconnaissance platoon were held in reserve. During this period there was set up a rotation system, which used reserve units as a source of replacements for the men in the front lines. It was found that men could stay in the front



lines for about four days before they began to lose their peak combat efficiency. Then they needed a rest.

The mission of the reconnaissance platoons was to establish listening posts as close to the front lines as possible. This quickly developed into having a series of OP's right in the front lines.

A 610 radio provided communicaitons. Hourly reports were made unless an emergency arose. If headquarters had to contact an OP between hours, a messenger was sent forward. All OP's were situated so as to cover important lines of communications such as crossroads, blown-out bridges, and likely approaches.

At first the gun companies used stone houses for cover. They either knocked out the rear walls and pulled the M10 tank destroyers right into the buildings or placed them in position behind the houses so they could pull out and take enemy tanks under fire.

Around the 10th of February the Germans began a systematic destruction by artillery fire of houses around the perimeter. This forced the destroyers to abandon the buildings and to seek what defilade they could find in the flat open terrain. The pioneer platoon was put to work helping to dig in the 32-ton destroyers. Various positions were dug for each gun.

Enemy Artillery Bombs

During this phase the whole battalion had a good opportunity to study German artillery technique. First the Germans would register with air bursts. Usually, these were too high to do any harm. Then they would follow through with ground bursts. It might be minutes later or hours, but sooner or later Jerry would be dropping ground bursts on areas over which he had registered with air bursts. The Krauts mixed mortar fire with the artillery rounds to make the showing of increased interest.

On one occasion, three mortar shells exploded in quick succession in one of the buildings used for an OP. The rounds whistled in through a window and exploded in the room next to the OP room. Each explosion knocked the man on duty to the floor. He had just time to pick himself up when the next round slapped him down again. After the last round he made a quick check of his physical condition and found that by some miracle he had suffered, in addition to a bruised dignity, only minor scratches from flying pieces of masonry. After that the OP was moved to the first floor.

About that time, the Germans also stepped up their night harassing fire. It consisted mostly of single planes flying over to drop strings of incendiary and antipersonnel bombs by the light of flares. The Germans aimed at supply dumps, but troops were crowded so close together on the tight little beachhead that each bomb sounded to each soldier as if it had his name on it. All that anyone could do was to sit tight and sweat it out.

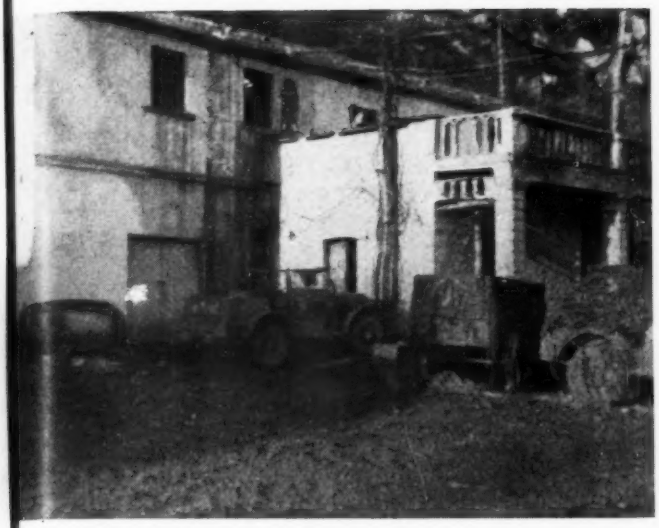
One string of bombs punched out a neat row of craters in the soil between the reconnaissance company and the TD battalion CP. One of the explosions tore away the top of the company CP tent, as neatly as if it had been cut by a huge knife, and flipped one of the men sleeping in the tent out of his cot. He was dazed but otherwise unhurt.

TD Reconnaissance OP's

The reconnaissance company had three OP's established at that time—two within the area of the German attack. One was at a crossroad 3500 yards directly east of Carroceta and right on the outer edge of the beachhead perimeter. The second was at a road junction 2500 yards southeast of Carroceta.

Company C destroyers were in position on an 1800

A tank destroyer fires from a dug-in position near Mignano, Italy. At Anzio maneuver was limited, dug-in positions essential. 3-inch guns used regular artillery sights.



Italian houses on the beachhead's perimeter were used for OP's. During the first days they were used as shelter for vehicles, but this cover was found inadequate, abandoned.

yard front beside a highway curve 4000 yards southeast of Carroceta with a good field of fire along two roads leading toward the German lines. Like the beachhead forces, the Germans would have to stick pretty much to the roads in making any move with armor.

Company A was in position along a dead-end road 2500 yards directly south of Carroceta with an excellent field of fire covering the main highway between Anzio and Carroceta.

One platoon of Company B was just left of the main Anzio-Carroceta highway, 3000 yards south of Carroceta. The other two platoons were held in reserve back with the 1st Armored Division.

That was the situation at the time of the attack. The whole beachhead force was constantly on the alert for a German move. Everybody sensed that something was brewing, but no one knew when it would break.

German Attack

Then came that brief warning on the morning of the 15th. Everything happened at once.

German tanks came rolling out of the north at daylight. They milled around in the factory district near Carroceta and came down the main roads toward the beachhead lines. The company OP's had to draw back early in the fighting. The M8's and M20's were pulled back along the Mussolini canal on the right and placed in defilade, where they could put up a last-stand fight if the Germans broke through.

Company C took the German tanks under fire at 3500 yards as they came down out of some woods east of Carroceta. Company A was firing at about half that range at tanks in the factory district left of Company C. Company B destroyers blasted away at tanks attempting to punch down the Carroceta-Anzio highway.

The gun positions were good. They were the best that could be had under the circumstances. But because of the mud, the destroyers could not move into alternate or supplementary positions. When the attack opened, they had to stay where they were dug in and slug it out.

In addition to the tank fire, artillery and mortar shells were pouring upon the whole beachhead. Allied tanks were outranged by German guns and were quickly knocked out. The noise of battle became an interminable din. Huge clouds of smoke and dust from shell bursts added to the confusion. Observation for both sides became increasingly difficult.

The Germans threw in wave after wave of infantry. It is hard to get the picture and difficult to describe, but as soon as one wave of Germans was stopped another came in to take its place. The foot troops came so close that destroyer crews fired on them with .50-caliber machine guns.

TD Defense

Men of the reconnaissance company removed .30-caliber machine guns from their vehicles and carried them into the front lines, where they fought as infantry. One infantry squad, fighting in a house, took over one of these machine guns and continued fighting after their own gun was knocked out.

The tank destroyers pumped a continuous rain of high explosive shells into the wave of advancing German tanks. The bursts mowed down infantrymen who were advancing among the tanks. Even near-misses took their toll in men. Concussion often stopped the tanks long enough to give the TD gunners a still target, and that was good. Little use was made of APC shell during this action. A near miss with an APC shell does not hurt anybody, but it is different when those HE shells burst among the Krauts!

During that night the fighting died down. Supplies of gasoline, food, and ammunition were brought up, and weary crews grabbed a few hours of sleep. The 16th was much a repetition of the 15th, with the Germans inching forward a few hundred yards, but still unable to make a break-through. That night supplies were brought up again. Wounded were evacuated and replacements were received.

On the 17th the Germans pushed forward again. This time they overran the position occupied by Company A, but later they were driven back and the battalion recovered several of the disabled destroyers. Those beyond repair were left in their positions.

After the 17th the German tanks withdrew and the beachhead reverted to its old status of alert defensive positions. Within 72 hours after the end of the fighting the battalion had received new vehicles to replace all those lost in action. These were dug in and the troops held along that line until the 5th of March.

The battalion's losses, especially in Company A which bore the brunt of the attack at close range, were heavy, but they did not approach those of the Germans. The reconnaissance company lost two quarter-tons when the Germans overran one of the OP's, but the bulk of the thin-skinned vehicles were saved.

Tank Training at Anzio

by Master Sergeant Robe

Signal Corps Photo

"A task force was organized on the ratio of approximately with tank destroyers and air observation post artillery a destroyers are in foreground, Sherman tanks in backgr

PENNED in a small semicircle of lowlands and canals, Fifth Army tankmen on the Anzio beachhead in Italy met their adverse situation by stressing closer coöperation with infantry and artillery.

Much of the crowded beachhead front was a tankman's nightmare—soft fields and marshes criss-crossed by deep ditches, all surrounded by high ground from which the Germans enjoyed ideal observation.

"We had to forget any dreams of a great tank show of mass maneuvers and begin thinking in terms of small, flexible units—companies and platoons—operating in limited areas," said one unit commander.

Tankmen thus found themselves shoulder to shoulder with infantry and artillery. The next step was to lock arms, and they did just that—more effectively than at any time in Mediterranean campaigns.

The Tank-Artillery Team

An excellent illustration of this trend is found in the training program inaugurated by a large tank unit during the four months on the beachhead. With the help of artillerymen, every officer and platoon sergeant in the tank outfit was made a qualified artillery observer. The tank students learned their new job under fire in artillery observation posts at the front, where they were instructed, two at a time, by artillery officers and experienced observers. Finally, each tank officer and sergeant observed alone for a three-hour period.

"The Germans really paid the bill for that course," commented one artilleryman. "The armored boys cut loose every time a Kraut stuck his head up."

As part of this program, two tank companies at a time, rotating through the unit, spent 10 days on indirect firing with artillery units. Each platoon functioned as an artillery battery. Observation was by Piper Cub. Reports were made to the artillery switchboard and from there down to the tanks through their company headquarters, which set up its own fire direction center.

Aiming circles, panoramic sights from .50 caliber machine guns, and gunners' quadrants were requisitioned for this work.

Every night a tank company practiced harassing fire. Artillery compiled data during the day and had missions waiting for the tanks when they rolled up. On one occasion one tank company fired 10 missions, totaling 300 rounds, target to target, in 20 minutes.

Tank-Infantry Communications

In the matter of teaming up with infantry, tank officers on the Anzio beachhead talked of only one thing—communications.

"A man in a tank is half blind and half deaf," pointed out an armored force colonel. "The infantry can be his eyes and ears. We can help each other immeasurably, but we must know where the other fellow is at all times. and that means direct communication."

To emphasize this and other possibilities in a coördinated tank-infantry attack, one beachhead general ordered a field demonstration. Two platoons of tanks and two of infantry staged the show before 300 men and officers of both commands 3,000 yards behind the front-lines. Each tank commander and each infantry platoon leader were equipped with 536s—the standard "handy-talkie" portable radio.

The demonstration was in two phases intended to stress the vital differences—becoming increasingly

*Fifth Army Field Correspondent.

The Tank-Artillery-Infantry Team, welded under fire at Anzio, paid dividends in battle.

an Robert C. Geake*

a platoon of light tanks to every two platoons of infantry, tached." In the above scene on Anzio beachhead tank und, infantry mounted on both. "Handy-talkies" aided.

Right: Tanks and infantry capture German prisoners near Cisterna, the first major town taken after American troops finally broke through enemy beachhead defenses. German in the foreground is a sergeant. Note two U. S. infantrymen in the background, crouching from enemy machine gun fire.

Press Association

marked in the eyes of field commanders—between (1) a tank-supported infantry attack and (2) a tank assault, with infantry mopping up and consolidating.

As colored flags, representing enemy antitank guns and machine-gun nests, suddenly appeared in distant terrain, the tanks and infantry platoon leaders talked freely with each other, designated targets, and coördinated every move. A public address system broadcast their conversations to spectators while a lecturer commented on the attack.

Tank-Artillery-Infantry Team in the Pay-Off

Increased coöperation between tanks and infantry and artillery went far beyond the training stage on the Allied Fifth Army's beachhead at Anzio. It paid off in battle.

One particular raid into enemy territory was a model of this type of action. A task force was organized on the ratio of approximately a platoon of light tanks to every two platoons of infantry, with tank destroyers and air observation post artillery attached. Officers from all commands met together for two days to plan a four-hour raid in minutest detail. When they "jumped off" every single man in the task force was thoroughly familiar with the pattern of the raid and his part in it.

Emphasis was on communications. In addition to his tank radio on company and task force channels, the tank platoon leader communicated by the 536 "handy-talkie" direct to the commander of his company of infantry. This officer was never more than 15 yards from the lieutenant's tank, sometimes in it, and his artillery observer with a 59 battery pack radio was always with him. The tank platoon leader could thus control his own artillery, call up an infantry platoon to dig up mines or immediately come to the aid of doughboys who had radioed for help on a pillbox. The task force commander set up his CP at the jumping-off point.

The results speak for themselves. The raiders killed 10 Germans, wounded many others, captured 61 prisoners and brought back information and equipment. Not a man in the task force was scratched. As the raid ended, infantrymen outposted tank positions, while tankmen called in their artillery and then, withdrawing behind a perfect smoke screen, carried out the infantrymen on top of their tanks.

"It was communications and time all the way," explained a tank commander. "That is what we concentrated on in the limited area of the beachhead—direct, inter-platoon communication with infantry and time to plan and coördinate. There was nothing to worry about but the Krauts. That's the way it ought to be."

A British soldier looks at a captured German Goliath or "doodlebug" found recently in a dugout in the Normandy beach area of France. First used on the Anzio Beachhead, this type of weapon, carrying a heavy explosive charge and operated by remote control, is not retrievable.

This radio-controlled "tank," called by the Germans the B4, is an explosives carrier. Above picture was taken looking down on the tank from the rear. This was recovered with great difficulty, under enemy fire. Unlike the "doodlebug," it can be recovered after demolition is dropped.

British Official Photos

The German Goliath and

by Major James H. Quello

TWO German "secret weapons," the Goliath *(Minenhund)* and the German radio-controlled B4 tank, which were put into use in the Italian theater, were both stopped by artillery or mines before reaching our forward positions.

The Goliath

The Goliath, nicknamed the "doodle bug" by American soldiers, is a demolition-carrying tracked vehicle which looks like a miniature tank. In Italy the Goliaths got stuck in the mud and on hills, and sometimes exploded before reaching our lines, wounding German troops. The Goliath was also vulnerable to small-arms fire. Neither radio nor cable control made it effective.

The Goliath was first committed against our positions on the Anzio beachhead in February. Fourteen were knocked out by artillery, and none reached our positions.

The Goliath is five feet four inches long, two feet ten and a half inches wide, and one foot eight inches high. Two electric motors (earlier models had gasoline engines) move the midget at four to six miles an hour. The track is of light steel, with a 4-bogie suspension and a front driving sprocket. It has .31 inch of armor.

The motors are mounted one on each side and each drives one track. Directly behind each motor is a wet-cell storage battery which supplies the current. The motors are controlled by electrical impulses sent through a three-strand cable which unwinds from a drum at the rear. Direction is controlled by braking one track or the other. When the Goliath reaches its objective, the operator at the stationary control box explodes it. It cannot be moved in reverse, and is easily stopped in mud, on inclines, and in ditches or shell craters.

The length of the cable, and therefore the radius of action, is about 550 yards. The control box can be operated from a foxhole or from a tank, assault gun, or other vehicle.

The demolition compartment, built to carry 100 to 150 pounds of explosive, is somewhat forward of center and not in front as in the older model. Directly behind this compartment is a detonator compartment. A dry-cell battery in the stationary control unit is used.

The B4

A B4 radio-controlled, demolition-carrying tank was stopped by a British mine and towed in by British troops near our beachhead positions in April. It weighed

The driving seat of a German B4 is shown from above. When the driver is in his seat, the top hatch cannot be closed, and the driver's head and upper half of his chest are protected only by the front flap, which is 5/16ths of an inch thick. German soldiers call the B4 a "death trap."

nd B4 Tanks

about four tons and carried an 800-pound demolition charge on its front sloping plate. Upon reaching its target—a roadblock, pillbox, wire entanglement—the explosive is dropped, the tank moved off, and the explosive then detonated.

The B4 has a speed of nearly thirty miles an hour and runs on a 7¾-inch track, with five bogies, a front sprocket, and a rear idler. It has about ¾ inch of armor in front and sides.

The hull is divided into three main compartments for the engine, the radio equipment and a driver's compartment.

The engine compartment, in the rear half of the hull, contains a 6-cylinder gasoline engine, the radiator, fan, two gas tanks, and a hydraulic mechanism for controlling the tank when it is radio-operated.

The radio equipment compartment is in the front left side of the hull. It houses a radio receiver and relays for the operation of the engine control. A small box on the left of the apparatus, which can be removed by taking out six screws, contains a five-valve superheterodyne receiver tuned to a fixed frequency, and crystal controlled. This seems to have been made easily detachable so that other receivers tuned to different frequencies may be substituted.

In addition to the radio equipment, the compartment contains the transmission which appears to have only two forward speeds and one reverse. The cover of this compartment is made of sheet metal, but has screens for ventilation. There are two aerials, one mounted in center of the front hull plate and the other on the front part of the left fender.

The B4 is used to clear paths through barbed wire and destroy roadblocks and pillboxes. The operator drives it as far toward the target as he can. Then he switches the vehicle over to remote control and leaves by a side door. A stationary control unit, carried by the driver or in a nearby tank, assault gun or other vehicle, then directs the B4 in zigzag fashion to its objective. There the explosive is dropped and the tank is moved off to a safe distance before a time fuze sets off the demolition.

The vehicle, unlike the Goliath, is recoverable. But if there is danger of capture, the operator can set off a self-destroying device in the tank.

The driver of the B4 has a dangerous job. German soldiers call it the "death trap" or "living coffin."

German Fock-Wulf 190

A PRIME feature of the FW-190 is the wide use of electric controls. There is no mixture control. This is taken care of automatically. The familiar hydraulic pressure gauge is missing; it has no hydraulic system; the wheels and flaps are operated electrically. It is one of the few airplanes which uses electric control operating mechanisms to a large extent.

The FW-190 is powered by a BMW (Bavarian Motor Works) engine of the 14-cylinder, 2-row radial type, rated at approximately 1,600 horsepower.

The plane weighs approximately 10,000 pounds and has a wing span of 34½ feet. It resembles the AAF P-47 in flight.

Carrying two wing-tanks, the FW-190 has a long range. Standard practice of the Nazis calls for two wing-tanks with a bomb carried on a rack beneath the fuselage.

Cooling of the radial engine is aided by a power-driven rotary fan geared to the propeller hub. This aids in forcing air back over the cylinder fins.

Two shell-firing cannon are built into the wing roots and are electrically synchronized to fire through the propeller arc. In contrast, the regular fighter model of the FW-190 carries four cannon and two 719 machine guns.

The FW-190 was originally intended for use as a fighter. Its modification by the Germans has entailed numerous structural changes. This modified version under test by the Matériel Command was probably built in 1943. It is model 190-A4U8, the number indicates its designation for fighter-bomber, and the U8 means modification number 8.

It has been described as somewhat of a counterpart of the AAF's P-39s, P-40s and A-36s, and a plane that must not be underrated.

The German Robot Bomb

HITLER'S newest "secret weapon," the robot "plane," is a self-propelled bomb, launched from specially constructed ramps with the aid of jet propulsion. The Germans describe it as having a "rocket propelled gear" and claim that it is launched from "underground emplacements which are indestructible for all practical purposes."

The first enemy robot attacks were directed against southern England during the week following the Allied invasion of France. The British Air Ministry states that the Germans planned to launch the robot attacks much sooner but were thrown considerably off schedule by RAF bombings of the German experimental station at Peenemunde in Prussia as early as August of 1943. Other German factories making special weapons, notably those at Friederichshafen, have been repeatedly attacked and serious damage and casualties caused.

Discharge points in northern France have been bombed consistently since December. The U. S. 9th Air Force has revealed that Marauder and Havoc bombers have flown more than 7000 sorties and dropped almost 11,000 tons of high explosives on the launching installations of the jet-propelled projectiles in Pas de Calais since last November.

The robot plane has a fuselage 21 feet 10 inches long with a maximum width of 2 feet 4½ inches and a wing span of 16 feet. Its speed, estimated by observers, was given as 350 miles per hour and its demolition carrying capacity as equivalent to a 2000 pound block buster. The Germans later announced the speed as 375 miles per hour and said that each robot carried 2240 pounds of explosives.

Although the range determination of the robot is set prior to launching, there is no control during flight. Its use, therefore, is restricted to area targets within a limited range and probably in the general direction indicated by the launching ramp.

Defense against robot attacks has been confined largely to antiaircraft activity and fighter pilot attacks.

In commenting before Parliament, Prime Minister Churchill declared, "The flying bomb is a weapon literally and essentially indiscriminate in its nature, purpose and effect."

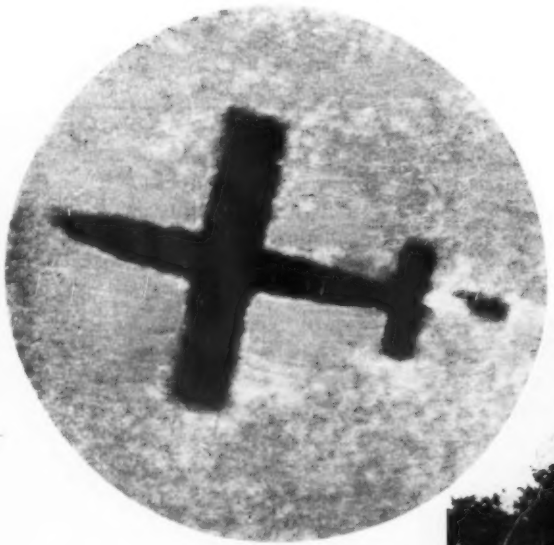
One pilot described his experience as follows:

"The robot was a sort of freakish-looking thing. There wasn't any propeller and its tail looked funny because of that jet thing sitting right on top of the fuselage with fire coming out of it. It has square wing tips and looks something like a miniature Mustang with tapering leading and trailing edges.

"I closed in on him from below—I like that spot because there is a big area to hit. On the fourth burst he caught fire, and big blue flames burst out. He just snapped over and hit the ground in a big field. There was a house in the field and it blew off the roof, smashed all windows and killed a lot of ducks. Of course he made a pretty big crater, too.

"A little later the same night I was out over the Channel when I saw a jet flame moving fast. I caught him about 10 miles inland. He turned into the biggest ball of flame you ever saw and exploded. I was at top of a climb but he bounced me even so. . . ."

As a military weapon the robot is still in a crude stage—with possibilities of future developments that stagger the imagination. The idea of sending machinery to war without manpower may be as revolutionary in the tactics of warfare as the introduction of gun powder or the intervention of air power.



Press Association

A German robot bomb dives toward the earth with flame streaming from its propulsion unit (mounted above and behind tail), after it crossed the southern English coast headed inland.

Signal Corps Photo

This installation, captured by U. S. troops on approach to Cherbourg, is believed to be launching ramp for robots.

General Hawkins' Notes

The Scope of Employment of Armored Forces-- Tactics and Conduct

TANKS must be associated closely with infantry and artillery or cavalry and artillery. The Russians, for the sake of brevity, call these teams infantry-tank teams and cavalry-tank teams. The Russian teams, of course, include artillery, engineers, signal troops, antitank units, etc.

Since the United States and England will have no cavalry in coming European operations, they will have no cavalry-tank teams. The scope of employment of Allied armored forces in France, therefore, will necessarily be smaller than that of the Russians on the Eastern Front, for the Russians use both teams.

The Russian cavalry-tank teams have, whenever possible, been followed, or backed up, by motorized or marching infantry, or both. But the cavalry-tank teams have been able to operate farther away from their supporting troops than the infantry-tank teams can go prudently. Increased cross-country mobility and independence of action enable cavalry-tank teams to make great turning movements and to fight delaying actions with more security, speed and effect.

Without cavalry in Western Europe, reconnaissance in force cannot be carried out so successfully or so safely; security for infantry formations cannot be provided so conveniently and so immediately; and powerful cavalry links between the less mobile infantry-artillery teams and the more mobile armored forces will be impossible to establish. The influence of difficult terrain and bad weather will be of far greater importance.

Motorized infantry does not replace cavalry. In Russia, the cavalry-tank teams have replaced the motorized infantry-tank teams for far-flung or independent operations. The U. S. armored division is an infantry-tank team. Armored infantry has replaced motorized infantry in the armored division because of armored carriers, which have considerable cross-country mobility. But these armored carriers also have their limitations. Like the self-propelled artillery, they often break down on difficult ground. They need much repair. Good roads in the theater of military operations become more and more rare. The failure of the infantry organic element in an armored force to keep up with the tanks has often been disastrous.

The infantry-tank-artillery-airplane team, as represented by the U. S. armored division (providing that the tactical air force supplies the air units), is a powerful and useful organization for attack. But it must be kept within supporting distance of infantry divisions. It must not be used improperly.

The Russians rarely send an armored force to attack without using a detachment of air force, subject to the orders of the ground commander, for both reconnaissance and support. But the methods of support, of communication, of recognition, of change in targets after the planes are in the air, and much else are all prearranged and practiced between the ground commanders and the air commanders beforehand. This procedure is not for any given attack but is a general arrangement with the planes that are to coöperate during a whole operation.

Missions

The missions for armored divisions are various and important. The chief missions are as follows:

1. Counterattacks, not initial attacks.
2. Exploitation of a break-through.
3. Pursuit of a beaten enemy.

Every tank engagement should be opened by use of artillery and antitank units. The tanks attack afterward. Tanks should not be sent to attack superior numbers of enemy tanks. Rather, the enemy tanks should be lured into traps quickly formed to deceive them. This is usually done by confronting the enemy tanks with light forces which fake a retreat so as to draw the pursuing enemy tanks into an ambuscade of artillery and antitank units.

The tanks should usually attack the flanks of enemy armored units after the antitank units and artillery have had a chance to cripple the enemy machines with their fire, begun as soon as the enemy is within range and continued throughout the action.

No head-on tank attacks against enemy tanks should be permitted, although in the thick of battle tank vs. tank combat will inevitably occur in small spots of the battlefield.

An armored force pushing forward to attack should be followed as fast as possible by infantry divisions.

If, after an advance to the attack has been started, the security elements warn of an enemy trap, the tank advance should not be continued stubbornly, but instead an attempt should be made to outmaneuver the enemy. By sending forward small well deployed forces that then retire and fake retreat, it may be possible to induce the enemy to attack, and when he does, to strike

him from ambuscade. Or, again, it may be possible to change direction of the attack and surprise the enemy's flank. These situations are very liable to occur during the exploitation of a break-through or in the process of pursuit.

Since the enemy defensive positions will be prepared in great depth, an armored force which exploits a break-through may often find itself surrounded and attacked by a force of all arms. The armored divisions, therefore, must know how to assume a position for all around defense where they can hold until relieved by some action of other forces.

Strategems to trap the enemy tanks should be practiced so that they can be referred to in orders by brief terms, understood by all. Stratagems require celerity of action and movement. They cannot be planned and laid hours beforehand, and it must be remembered that the enemy will attempt to use the same stratagems.

Although much of the activity of an armored force will be in combat with the enemy armored forces, the prime objective of such a force is the hostile infantry. If the hostile infantry can be defeated the enemy's whole army will be defeated. Often, however, in an effort to reach the enemy infantry the attacking tanks will be confronted by intervening enemy tanks. Tank battles, therefore, are inevitable. The broad principle on which operations should be based is not to seek battle with enemy tanks, but to be able to throw them out of the way in order to seek the enemy infantry. Modern tank-destroyers should be of great assistance in doing this.

Enough tank-destroyers, in organized antitank units, should be able to protect not only the armored forces but also the infantry and artillery forces left to fend for themselves. Thus, while the infantry divisions, or task forces are operating in force, the armored forces can be launched against enemy flanks, thrown into break-throughs, or used in pursuits, without constant apprehension that the supporting infantry may be badly mauled by enemy tanks during the temporary absence of the principal armored units.

In other words, instead of chasing around after enemy tanks, the tank force should go about its business of attacking the heart of the enemy and let the enemy tanks do the chasing around. This principle, of course, must be flexible and must be applied with the proper caution. The necessity for constant and all round security reconnaissance is apparent.

Reconnaissance

The chief use of an armored division's reconnaissance squadron will be to form covering forces in the front, moving by bounds, and strong combat patrols on the flanks and rear. This requires much training. Security thus becomes the important mission of the reconnaissance squadron. Other reconnaissance is best performed by task forces engaged in reconaissance in force.

The next most important duty of the reconnaissance squadron is to reconnoiter the ground over which the division is expected to advance. Forces should not be committed blindly into situations where the ground may offer surprises or unforeseen difficulties. The covering force principle should enable the commander to avoid this.

There are two kinds of reconnaissance that are indispensable. They are *security* reconnaissance and *information* reconnaissance. It is impossible to state which is the more important. Not only the armored forces, but all task forces, must have all around protection at all times from surprises by the enemy or by the terrain.

Information reconnaissance, so called for want of a better term, or sometimes called exploratory reconnaissance, is generally more distant than security reconnaissance and is done in three ways. They are (1) reconnaissance in force by task forces, said by the Russians to be the most reliable and efficient means; (2) infiltrating patrols; and (3) airplane reconnaissance using observers and photography.

Modern photography from airplanes has become perhaps the most important means of information reconnaissance. It depicts the nature of the ground, the cover for advancing riflemen and other troops, the defensive installations of the enemy, and often the presence of marching or stationary troops. This kind of information is extremely important for armored forces before they are committed to the accidents of the ground or the prepared surprises by the enemy. Airplane reconnaissance, however, must be supplemented constantly by ground reconnaissance of all kinds. Thus, the armored forces are going to be called upon for reconnaissance in large measure and for which armed vehicles are not always suitable. In the absence of cavalry the armored forces will have to accept this rôle and do the best they can.

The Commander's Position and Use of Reserves

It is not easy to prescribe the use of reserves. It does no good to say that reserves must not be used too early in the action or too late. It can be stated usefully that the commander must not forget his reserves or fail to make the most of them. Many commanders have forfotten their reserves or have been so timid about committing them that they never used them at all, or only when forced to do so by defeat or threatening disaster.

The position of the commander determines the proper use of his reserves. He cannot decide when or where to use them if he is back at a command post merely receiving and passing on information by telephone. The commander of an armored force should be well forward with his troops, certainly not behind his reserves. He must be where he can personally talk to his subordinate commanders from time to time. He can often influence the action of one or another of his groups by his personal inspiration and leadership. If he is a good commander, his subordinate leaders are glad to see him appear. They know that he has not come to find fault

or criticize but to help and inspire. By visiting subordinate leaders at various points the commander can see for himself what is happening and will be in position to change or improve the situation. He can use his reserves with much more certainty and skill.

Reserves are not generally to be used for the purpose of reinforcing a weakened unit, but rather for striking at the critical moment at the sensitive point in the enemy's disposition. A weakened unit is helped much more by this tactical employment of reserves than by sending reinforcements. However, the commander must take one or the other of these courses. If a subordinate command is large enough to have a reserve of its own and has used them and needs to replace them, the commander may send units from his general reserve for that purpose. That is, if he thinks he can spare them from the general reserve that he intends to use at the critical moment. If the situation is such that he does not intend to use his reserve as a whole, he would better apportion it to his subordinate commands.

When a reserve is sent to attack, it must be preceeded and protected by a covering force and combat patrols just as if it were a front line unit going forward to attack.

Communication with a commander who is forward, where he ought to be, can be easily arranged by means of radio. He does not have to remain near a telephone station. Higher commanders can reach him by going forward to where he has been located by radio inquiry, or by simply talking to him through radio.

The old spectacle of World War I, when a regimental commander remained back at the command post to hear all about the battle by telephone but saw nothing of either the battle or the ground in front of his troops, is now over—as it should have been then.

Sending infantry to advance under fire over flat coverless ground, which neither the commander nor his staff, nor other agents have seen beforehand, is little less than criminal stupidity. Yet in World War I this was done generally while the commander sat in a dugout several miles in rear of his fighting lines and pretended to exercise command by pushing electrical buttons or shouting into a telephone. This amusing and absurd custom was developed from long periods of trench warfare, but it should never have been tolerated. Yet, a commander, who left his so-called command post and went forward to see his troops in action, was severely criticized by higher commanders who, in their turn, sat in command posts and expected to talk at any time by telephone with subordinate commanders who knew no more of the actual combat situation than did the higher ones. Corps and army commanders will have to remain somewhat in rear of their commands but, from divisions down, all commanders should be personally as far forward as their reserves. Their telephone stations can be kept in rear.

The present armored division has 3 battalions of modern tanks, 1 company of light tanks, 3 battalions of armored infantry, 3 battalions of artillery, a mechanized cavalry reconnaissance squadron, engineers, signal and medical troops, headquarters and service companies, and trains.

It must have attached thereto some units of tank destroyers, and probably a battalion or two of tanks and infantry for the division reserve.

How to handle all of these units is a problem for the division commander. I have ideas on this subject, but our armored force commanders have had experience in handling these elements in training, and some of them in battle. I would not presume therefore to offer any suggestions except those mentioned above.

MODERN RECONNAISSANCE—the most popular Cavalry book since *Cavalry* Combat.

The insistent demands by men in training and on the battlefront for a single volume which would comprise the important information thus far secured on the subject has given birth to the new and comprehensive book, *Modern Reconnaissance,* published by THE CAVALRY JOURNAL June 1st.

The Table of Contents of this book includes articles on training for reconnaissance units, information on the problems met in various war theaters, and stories of the practical value of reconnaissance in actual warfare by men who participated in the action described.

The format has been planned with an eye to the needs of men "travelling light." Excellent maps for study in connection with the articles are included as well as an abundance of illustrations, yet the book has been kept to a convenient size to pack easily, or fit into a uniform pocket.

(See inside front cover for Table of Contents.)

Order blank—Page 79.

Editorial Comment

Worthy of Emulation

Once again the Cossacks are on the "prod." Such a statement is not intended to infer that the use of Soviet cavalry has been intermittent. An article, "Vital Rôle of Soviet Cavalry" which appears in this issue (page 14), gives a timely résumé of the continued exploits

and brilliant achievements of the Russian Cossacks throughout the many campaigns on the Eastern Front.

Daily communiqués as well as reports from American correspondents, tell of the deep thrusts into Nazi rear installations and of wide flanking movements which, by encircling strong Nazi positions and rail centers, have enabled the Russians to destroy or capture large forces of the German army.

"Die Kossacken Kommen!" is no mere dramatic or colorful phrase coined by war correspondents. German prisoners confirm the fury of the sudden assaults and the fear and desperation generated in the ranks of German infantry.

The Soviet war strategists have long been employing cavalry and tank units in coördinated action and Nazi writers—civilian and military—admit the seriousness of facing this combination in combat. (See article, "Cavalry in This War," by Lt. Colonel Benary, German Army, Page 52.)

One of the leading exponents of this successful tactical combination is Marshal Rokossovsky, present commander of the Byelorussian Front. A specialist in cavalry attacks during the defense of Moscow and, by the combined use of these arms, was later responsible for the annihilation of the Nazi Sixth Army at Stalingrad.

During the present unprecedented successes in the northern drive toward Germany, the Soviets are using their cavalry in greater numbers than ever. Divisions and corps, acting both alone and in coöperation with tanks, are spearheading the advance along the entire front. Rokossovsky's employment of large forces of cavalry and tanks in the surge of the Soviet armies toward Poland and East Prussia is strong and sufficient proof of the efficacy of the tremendous striking power of the tank-cavalry-air combination, under the leadership of commanders who know how properly to employ and coördinate these highly mobile arms.

Unit Citation, 2d Squadron, 5th Cavalry

Battle honors have been awarded in the name of the President to the 2d Squadron, 5th Cavalry Regiment, of the 1st Cavalry Division, for extraordinary heroism on Los Negros Island, Admiralty Group.

The unit's citation follows:

"The 2d Squadron, 5th Cavalry, is cited for extraordinary heroism in overcoming unusually difficult and hazardous conditions in battle. On February 29, 1944, this unit, landing on Los Negros Island, Admiralty Group, New Guinea, which was held by a determined, entrenched enemy in greatly superior numerical strength, quickly destroyed the immediate enemy defense, established its beachhead, and occupied the enemy airstrip within a few hours.

"The forcefulness and aggressiveness of its assault overwhelmed the enemy initially, and the brave spirit of the personnel of the squadron permitted the early seizure of a secure hold on the enemy territory. In subsequent operations for three days and three nights, the 2d Squadron valiantly extended the controlled area by day and initiated the work prescribed for its mission under enemy fire, and by night stood by its defenses and repulsed determined and continuous infiltrating and harassing groups of the enemy, and on the second and third nights repulsed concerted counterattacks by the enemy in such force that annihilation of the squadron might easily have resulted except for the grim determination with which the squadron maintained its defenses."

Not Bad!

The Army War College Library has recently started publishing a list of selected articles of military interest culled from the recognized army and navy publications as well as civilian periodicals such as *Saturday Evening Post, Time, Life, Collier's,* and *New Republic.* The material is classified under subject headings. It has been noted with considerable interest that in the first edition of this list, *Selected Periodical Articles* (May, 1944), THE CAVALRY JOURNAL has been given nearly twice as many listings as any other military or civilian magazines. It had a total of 62 entries. The next most quoted publication was a military weekly with 34 listings. Following that was another semiofficial journal with 26; next, a popular commercial weekly with 25.

Overseas Edition!

Beginning with the July-August issue, The CAVALRY JOURNAL is printing a special overseas edition for all subscribers in the armed forces serving outside the continental limits of the United States. This edition will contain all of the material (reduced to a 5" x 8" size) that appears in the regular domestic edition. It is half the weight, has a higher priority for shipping space, is delivered to overseas theaters several weeks earlier than the regular edition, and has more assurance of reaching extreme forward areas.

Send in your correct overseas address as soon as you know it! Your special overseas edition of The CAVALRY JOURNAL will follow you promptly!

Errata

It is regretted that the following errors in identification of matériel were made in captions of pictures in the May-June issue of the JOURNAL:

In "Tanks in Sicily," the vehicles pictured on Pages 7 and 8 are M-7 "Priests" organic weapons of armored artillery.

In "Employment of Tank Destroyers," the illustration on Page 62 appears to be an M-7 mount with 105mm howitzer.

Survival in the Philipp

by Major Arthur K. Whitehead, Ca

EDITOR'S NOTE: In the May-June issue of The Cavalry Journal, Major Whitehead described his experiences during the early days of the Jap attack on the Philippines. As a lieutenant with Troop "A", 26th Cavalry (P.S.), he witnessed the bombings of Fort Stotsenburg and Clark Field and marched north with the regiment to meet the Japs landing at Linguyan Gulf. On the afternoon of December 22d the regiment reached the outskirts of Damortis and immediately went into action from positions in the surrounding hills.

After a futile attempt to stem the Jap tide, pouring in from the ships and barges jamming the harbor, the outnumbered and outflanked Scouts were forced to withdraw toward a new position across the river.

At about 2200 Jap tanks and infantry broke through Troop "E" which formed the rear guard. Troop "A", momentarily dismounted, was thrown into confusion. While Major Whitehead was mounting, his horse bolted and he was dragged for some distance and knocked unconscious.

"Later," he concludes in his May-June account, "when I came to, the firing had stopped, forms could be seen moving down the road from the direction of the enemy, and there were no cavalrymen around. I jumped a fence and got into a bamboo thicket by the side of the road."

AFTER getting off the road about fifty yards into a bamboo thicket I dropped down on the ground, quite well exhausted and still dizzy. Firing had stopped altogether. From the sound of tanks and gutteral shoutings in an unfamiliar tongue, it was apparent that Japs were on the road at the place where Troop "A" had been surprised. What was the next move? The river where the regiment had watered horses late in the afternoon should not be more than a mile to the east. It was logical to believe that, after destroying the bridge, the 26th Cavalry would take up a position east of the river. I decided to get farther off the road, then work toward the river in the hope of finding a crossing and eventually getting around the right flank of the position that I assumed that the 26th might have taken.

The terrain was hilly, covered with underbrush and occasional clumps of trees. It seemed likely that Jap patrols would be in the area. Just before Troop "A" had pulled out of its last position, observation posts on the right flank had reported sounds of equipment and Jap voices nearby.

The pitch darkness made it necessary to feel for each step. The going was slow, and after each short distance it was well to stop and listen for a minute or two. During this time, the sound of a sudden burst of machine-gun fire came from the road; a pause, and then another burst. I wondered if the Japs were doing away with prisoners they had caught.

Before long a red glare filled the sky ahead; and it soon became evident that it was from a fire. As I came over the crest of a hill, I saw that about 300 yards away the bridge across the Apangat River (which the regiment had crossed earlier in the day) was burning in the center. From the glare of the fire, I could see several low-built tanks parked on the road and Japs on the bridge examining it. Shots were being fired from the river bank on both sides of the road from the Jap side, but no firing was coming from the opposite bank. Before long the Japs hurried back from the bridge. Then two of them climbed into the leading tank and, driving onto the bridge, started through the fire. As they reached the center of the bridge I heard the sound of cracking timbers and then saw the tank ease over on its side and crash into the water.

To give the Japs a safe clearance, I started north parallel to the river with the idea of crossing it farther up. After walking for half an hour, I turned east toward the river, and soon reached a barbed wire fence bordering a road four or five feet down an embankment. About to climb the fence, I heard the sound of gutteral jabbering nearby, and crouching low, I watched a Jap patrol walk by. It stopped a few yards past me. A few words were said, then all was quiet. The scuffling of the Japs' feet could be heard as they changed weight from one foot to the other. One Jap, probably leaning against the embankment of the road, loosed a small landslide; it sounded like a mountain falling.

Carefully feeling each spot before putting my weight on it, I crawled a hundred or so yards away from the river. At one time during this crawling, something moved in the bushes not far away. As the noise came closer, there was little doubt in my mind that it was a Jap. After a minute or two of sweating, I saw a pig walk into a clearing a few feet away. I then walked a short distance farther away from the river, turned north once more, and again travelled parallel to the river. Toward morning I crawled underneath a bush to rest—thinking it would be impossible to live until daylight without a drink of water.

Waking at daylight, I crawled to a nearby hill for a look around. It still seemed possible that Jap patrols should be in the vicinity. To the west was Lingayan Gulf, and in the same place as the day before there was the concentration of Jap ships. To the southeast I could see the road leading to Rosario. No firing could be heard anywhere.

Not long after I reached that hill, three B-17 U.S. bombers came flying low out of the south, and passing over the Jap ships, dropped their bombs and continued

ppines

December 22, 1941
March 1, 1942

d, Cavalry

Photo, Courtesy National Geographic Society

Major Arthur K. Whitehead, pictured at right, is the first cavalryman to have brought home an account of experiences in the Philippines. He says, "It was a bamboo thicket such as the one shown here that I jumped into after getting off the road December 22d."

north. They were fired on by Jap antiaircraft from the shore.

Leaving the hill, I walked two or three hundred yards down to a stream, where at last it was possible to have a drink and a wash. There I cached my gas mask and broken flashlight. My helmet had been lost the night before.

Now for something to eat; it had been quite a while. I walked down the stream, and before long came to a clearing with a nipa shack on it. From the shade of some trees on the edge of the clearing, I saw two Scouts walk out of the house, and after watching them for a minute to be sure that they were not Japs dressed in American uniforms, I whistled to them, and they came over to where I was sitting.

The Scouts were from Troop "E" of the 26th, and their story was much the same as mine. Troop "E" had been the rear guard of the regiment the night before, and they said that the Jap tanks had come right up to their position and stopped; that one of the men of the troop, believing the tanks to be American, had ridden up, knocked on a tank, and signalled the crew to open their turret. The Japs, recognizing an enemy, had immediately started firing. The pitch darkness on the road the night before had been deepened by the mountains and tall trees in the vicinity. Troop "A", before it had taken position on the right flank of Troop "E" had been warned that at a certain time a company of 17 American tanks would pass through its position en route to the rear. Later, as they passed, members of Troop "A" had counted the tanks by their noise. Troop "E" must have been warned likewise and should have counted the same tanks as they passed. However, with the darkness making it impossible to see, it is possible that Troop "E" had miscounted or else the number of American tanks as relayed to them had been in error. Also, I do not believe that at that time many of us realized that we were fighting a determined enemy—already present in considerable force.

The Scouts from Troop "E" joined me, and we began to look for food. The countryside around was completely deserted of civilians. We searched through nipa

houses in the area for nearly an hour before finding enough rice and eggs for a meal. Before long our stomachs were full—it was surprising how well this food went down. What was left of the cooked rice was wrapped in banana leaves and carried along.

Through field glasses we could see Jap armored cars and tanks moving east on the road leading to Rosario. Armored cars were also bringing cyclist troops from the west to the flat country. After unloading, these cyclists would start peddling east in the direction taken by the tanks, and the armored cars would go back for more men.

By the middle of the morning of December 23d no firing had been heard, which meant that the American line had fallen back a good distance below Rosario. However, there still seemed to be a chance of getting back to the regiment. We started east, but at about 1500 found that it was necessary to hide until dark, because of the open country in sight of the road which had to be crossed.

Before dark we moved east again and during the afternoon were joined by two more Scouts whose story was about the same as ours. At about 0200 of the 24th, we came to a paved highway. Up and down the road the Japs had armored cars parked about every half-mile or so with men patrolling between them. Occasionally the Japs would fire into the darkness at some noise or movement. We learned that there had been fighting in that area the day before, but it was hard to account for the Japs' present actions. The natives in the area seemed stunned; they could not realize why the Americans had allowed the Japs to enter the Philippines. Every group of natives we passed asked the same question: "Are American soldiers coming from the States to help us?"

Hiking back from the road we got deep into a forest and tried to get some rest. Having come a good distance into the mountains during the night, we found that the change in elevation and temperature made it impossible to sleep without a blanket—which no one in the party had.

That morning (December 24th) more Scouts joined us. They had been able to pick up some rice and before long we had breakfast. The Japs were still on the road a mile and a half to the east. That made it necessary to go north far enough to get around this road. By noon we believed that we had gone far enough and turned east. At this time a Philippine Army officer and four men joined the party, which now totaled 21. Of the 21 men, three had been wounded on the 22d but not badly. No one had rifles; the scouts had pistols.

After eating, we started east again, and by nightfall we were high in the mountains with plans changed to join the Baguio garrison. That night we ate a good meal of rice, bananas and coconuts that had been given us by natives during the afternoon.

The next morning, Christmas, we started up the mountains in the direction of Baguio, and at about 1400 came to the first human habitation—an Igorot settlement. These natives live in small villages scattered here and there through the mountains on any land level enough to build terraces for growing their rice. The village was completely deserted, but after nearly an hour some of the Scouts who spoke the Igorot dialect located some of the inhabitants, who had fled in fear that we were Japs, and persuaded them to come back and cook us food. Before long a pig was killed and rice

"This Igorot village is very much like the one where we ate our hearty Christmas dinner." Rice terraces can be seen on the hill in background.

Photo, Courtesy Commonwealth of the Philippines.

Road to Baguio, Luzon. "Going up to and away from Baguio, December 25th-28th, we hiked through much country where this picture certainly could have been taken."

Photo by Charles Martin, Courtesy National Geographic Society.

cooking. By 1700 Christmas dinner was on the floor, and we were devouring it with our hands. Except for guards, everyone in the party was asleep before dark.

The following day, with a guide, the party hiked over Sto. Tomas Mountain and reached the rest station about 1600. At one time during the day the trail had brought us to a peak which overlooked Lingayan Gulf and from there we were able to count 54 Jap ships anchored around Damortis. From the rest station we telephoned Baguio for a truck and learned that the Baguio garrison had left two days before. There were still no Japs there, however, and a truck was sent to meet us at the end of the Sto. Tomas road.

It was nearly dark when we arrived in Baguio, which showed little effect from the war except for a general tenseness in the air. Baguio had been declared an open city and, according to reports, the city council already had contacted the Japs who were expected at any time. The only bombing in the vicinity had been on Camp John Hay. There we noticed a few bomb craters on the road and lawn below the mess hall, but saw no evidence that buildings had been hit.

The commissary still had a good amount of canned food, cigarettes and beer. As much of this as we could carry was piled on the truck. The plan now was to go to Itogan, a mining town ten or fifteen miles from Baguio, then through the mountains to the Agno River valley, thence down into the central Luzon plain and come out at a point about 75 miles southeast of Damortis, where it was hoped that there still might be a chance of rejoining the Americans—if they were not being driven back too fast.

In Baguio some American civilians offered us aid and advice. The three wounded men were taken to the hospital; one had to stay for an operation to remove the bullets from his arm. At about 2100, as the party was ready to leave for Itogan, a truck with 20 Filipinos drove up. They had been part of a group of 500 trainees on their way to Camp Murphy near Manila for induction and training. At the foot of the Kennon Road going down from Baguio two days previous to this time, their party had been intercepted by the Japs. Some had been killed, the rest sent back to their homes. Most of these men were bare-footed, had no hats, and were dressed in rags; however, they had ammuniton and rifles to spare in the bottom of their truck, and so they joined our party.

An hour later we were in Itogan, which showed evidence of the hurried departure of the Baguio garrison. A considerable amount of equipment and supplies, which they had been unable to carry through the mountains to Imugan, had been discarded there. The mayor of the town cooked rice. The beer brought from the commissary was traded for two sacks of rice, which, along with the canned food brought down, was distributed among the men. Rifles and ammunition were also distributed.

From Itogan it was necessary to travel by foot, and by midnight we had left the road and were sleeping on the trail leading to the Agno River.

On the morning of the 27th, the party was organized into squads and platoons and the new men given instruction in the rifle. By afternoon we were on our way again.

By the morning of the 28th of December, those of us who had come up from the valley to Baguio were

physically exhausted but to stop a day for rest might have meant taxing the slim chance that we hoped we had of overtaking friendly troops before they were driven too far to the south, so we continued travelling and that night camped about 6 miles north of Tayug, Pangasinan, which could be seen burning in the distance. Two scouts, sent to Tayug to get information, reported that the 26th Cavalry had been there a few days before and that the Japs had passed through only the previous day but were now already far to the south. The buildings burning were Chinese stores set afire by the Japs.

The next day we by-passed Tayug by going through the mountains to the east and camped that night east of San Quintin.

The morning of the 30th the party finished its last food. Groups were sent out in search of more, but one by one they returned through the day without any luck. When the last group looking for food came back with none, it was decided that the party should break up into small groups and try to work into Bataan. From the way the situation appeared in the north, if a stand were to be made anywhere, it would have to be in the Bataan Peninsula, as called for by the old plan of defense.

A Scout, two Igorots and myself started south. The first night we met an American officer out of the 26th who also had been separated from the regiment the night of December 22d and was still trying to find some unit to join. Two days later another American officer from the 91st P. A. Division joined us. His outfit had been scattered in the battle of Pozorrubio, Pangasinan.

Travelling mostly at night, the six of us started working our way south. Down the east side of the Luzon plain the highway ran close to the mountains through which we were making our way, and many times from a distance we saw column after column of Jap tanks and motorized infantry moving south. At whatever house we stopped, regardless of the hour, the owner would cook food for us. We found then and many times later that one of the finest traits of the Filipino is his hospitality. Sometimes when passing along, a native would run out from his house and give us a chicken or some eggs, or bananas or the like. The natives always asked when the "aid" was coming; when and where would the American forces land?

On the other hand, (as in all of the other countries occupied by the Axis powers) there was a certain element who had become fifth columnists for the Japs. Stories were heard of both Americans and Filipinos who were betrayed by these traitors.

In the vicinity of San Jose, Nueva Ecija two American engineers from Baguio joined us. There was no reliable news as to where the fighting was going on in Luzon or anything that was happening outside of the Philippines. In the back districts through which we had

Route taken by Major Whitehead from Luzon to Panay.

Photo, Courtesy Commonwealth of the Philippines

"In central Luzon we passed through many towns similar to the one shown here. Towns were often avoided."

to travel, such a thing as a radio was unknown, and often the natives did not even speak English. On the 2d or 3d of January, 1942, a Filipino told us that Manila had fallen. We did not believe him. A week later we found that he had told the truth. While travelling southward day after day, we picked up rumors here and there until we slowly realized that all of the remaining American forces had been withdrawn into Bataan and Corregidor.

Often at night large fires could be seen in barrios along the way. In reply to our questions, the natives invariably gave the same answer—the Japs were burning their dead. Sometimes as many as 30 truckloads of dead in a day were reported to us as being brought north to be burned. A small amount of the ashes of these mass cremations were put in small boxes and sent home to the relatives in Japan.

One American of our party dropped out near Sibul Springs, Bulacan. The rest of us believed that there might be some chance of getting onto Corregidor if we could get down close to the Manila area.

On the 20th of January we arrived in Montalban, Rizal, about 40 kilometers east of Manila. Our trip from Baguio had taken nearly a month. In a car, and using the highway, it would not have taken a full day.

In the vicinity of Montalbon there were 10 to 15 Americans—soldiers, sailors, engineers, and businessmen. Some of them had already learned that their families had been interned by the Japs in Manila. None of us knew what the next move should be, or what was best to do. Several Filipinos, sent out on different routes to find a way to Corregidor, were never seen or heard of again.

The guns from the Bataan Peninsula could be heard night and day, yet there was not a chance of getting there. The Japs were everywhere—in the towns and on highways. Even that early in the war, it was not prudent to stay in one place very long.

From the radio we heard that there were American forces still intact on the Island of Cebu, south of Luzon. Three of us decided to try to get there.

The hike down from northern Luzon, along with the diet of rice and haphazard sleeping, had been exhausting, but after a 10 day rest we were ready to move again. The night of January 30th we left our camp in the hills north of Montalbon and started south toward the Tayabas coast. There was a full moon, which made night travelling easier. The natives continued to feed us and guide us wherever we stopped. Hearing that there was a bakery in the town of Antipolo, Rizal, we went there to get some biscuits. (More than anything else we craved bread, which was almost impossible to get.) While sitting in the bakery two truckloads of Jap soldiers came into the town. The natives hid us and got us out after dark.

On the north shore of the Laguna de Bay we had a treat. A prominent citizen there had us for dinner, and his hospitality included gifts of bread, American cigarettes, and a good drink. American cigarettes at that time were selling for $1.00 to $2.00 a package.

Photo, Courtesy Commonwealth of the Philippines

"Much country of this type is found in southern Luzon—from the Laguna de Bay to the south Tayabas coast." It was on the Tayabas coast that Major Whitehead and his companions were discovered by the Japs. Only he escaped.

From Laguna de Bay we took an outrigger south across the bay and landed in the town of Pila in Laguna Province. From there we hiked to Nagcarlan, Laguna, and across the mountains southeast to Tayabas, Tayabas.

On the 9th of February we were in a small barrio of Antimonan, Tayabas. We had just finished lunch when, at about 1400, the natives around yelled that Jap soldiers were approaching. We had been told when we entered the barrio that there were pro-Jap Filipinos and Jap soldiers around, but there had been so many such warnings without anything coming of them that we had given little weight to this one.

When the natives started running and yelling one of my companions, who was pretty sick from fever, and I were sitting inside a shack, the other American was out-

side watching. After yelling into the shack for us to get going he disappeared. The American with fever had his rifle lying beside him, and all that he had to do was pick it up and run. My rifle was in the far corner of the shack, and by the time that I had gotten it and was outside, my two companions were both out of sight.

Earlier, before eating, I had taken a walk and as a matter of habit had looked around for a place to duck into in case of a surprise. To the north I had noticed a thick forest. Outside the shack the Filipinos were running, yelling, and pointing back of them. I grabbed my pack and took off. Before I had gone many steps the firing started. I recognized the now familiar high-pitched crack of the Japs' .25 calibers, but as usual they were not shooting too well. I dropped my pack and before long was in the cover of the forest. It was an hour before I stopped to rest. Having travelled a good part of the way in stream beds, I felt fairly confident that the Japs could not follow me.

Shortly after the first shots were fired in my direction, I heard the firing of 10 or 12 rifles which continued for about five minutes. I wondered at the time if the Japs were shooting the natives.

My two American companions and I had a previous understanding that if ever we were scattered we would assemble at the next place on our route. Not knowing a loyal native from a disloyal one, I decided not to inquire for the whereabouts of the other two, but to continue on to the next barrio alone.

With the help of a compass, I started south at dark being careful to keep off the trails. Getting tired of breaking through the forest, toward morning I got on a trail, and before many minutes nearly ran into a patrol. The Japs were not very alert, which was the only reason that I was able to get off the trail and into some bushes. At daylight I came to a nipa shack and asked for breakfast, then spent the day hiding in a banana grove. About 1600 I started south again, and this time kept as much as possible in the undergrowth of the forest.

At dusk I came to a nipa shack and stopped in search of food. I had not seen anyone all day and had no idea what the Japs were doing. Recognizing me as an American, the owner of the house became quite nervous and motioned me to follow him to a nearby bamboo thicket. He could not speak English and my use of the Tagolog dialect was not good, but he got the idea across that there were Japs around, and for me to stay hidden, and he would bring something to eat. I did not know whether to trust him or not. This was one time that the chances of getting out did not look very good.

Soon the man returned with some rice and another Filipino who spoke English. This man told me that some 50 odd Japs had been sent into this area that morning and had been searching all day for an American. He said that the day before a patrol of Japs had surrounded two Americans in a barrio to the north, had killed one and wounded and captured the other, and that a third one had gotten away. During the scrap two Japs had been killed and one wounded. This news of my friends was startling, as all afternoon I had expected to run into them.

Then came a gift from heaven—undoubtedly in answer to the many prayers that I had been sending up in the last 24 hours. The Filipino told me that about a kilometer away down in a lagoon was a banca, and that he knew two men who would paddle me across to the island of Marinduque where there were no Japs. I did not believe it, but pretended that I did, and we started. Feeling our way down a pitch-black trail, the Filipinos talked in whispers and grunted every time I set a stone rolling. In half an hour we were beside the lagoon and they showed me the banca made out of a log about 15 feet long and two feet wide. Then they hid me beside the trail while they went after the boatmen.

Before long the boatmen arrived, and we started to haggle about the price of the ride. Under the circumstances I was not difficult to deal with and by 2200 we were in the banca gliding down the lagoon toward the sea. The boatmen were on their knees—one at each end of the banca. They neither talked nor smoked, and they were careful to see that their paddles made no noise against the sides. With their eyes watching the shores incessantly, they glided the banca through the darkness. The trees on the banks cut out what little starlight there was. The only light was the phosphorus in the water stirred up by the paddles; the only noise was the trickle of the water off the paddles.

We glided out of the lagoon into the sea. The tension was off and I fell asleep. At dawn, when we headed into shore, I was surprised to find that we were still along the coast of Luzon. It was necessary for us to follow the Bondoc Peninsula south until we got to a position which gave us a short hop across to the island. On the beach we roasted bananas and ate them with sugar cake. Then, still keeping close to shore, we started south again.

Shortly after dawn on February 12th we landed on Marinduque Island. It was hard to believe that there was any place where there were no Japs. The town of Santa Cruz was as quiet and peaceful as any such town had been before the war. A few casual questions were asked about Luzon and the Japs, but no one seemed seriously concerned about it. Everyone was sure that the American "aid" would be in the Philippines before the Japs got as far as this island. My walk from the beach caused quite a crowd to gather. In the first place, I had a two months' growth of beard which always aroused considerable curiosity among the natives who do not have beards. In addition, the sight presented was something worth seeing. There was an American officer, barefooted, and wearing a pair of boatman's trousers that came up to his knees, a pink silk chemise, and a straw hat three sizes too small perched on the top of his head.

One of the citizens of the town entertained me and served hot coffee and an egg sandwich prepared to my

specifications—which consisted of a half a dozen eggs between a loaf of bread. After that I was given a bottle of beer, some Filipino cigarettes and a pair of shoes.

In the afternoon a Philippine constabulary officer arrived in town. The feeling of the constabulary commander about the Japs was different from that of the people. He had about 40 soldiers to protect the whole island and how to do it when the time came was a matter of serious concern to him. And since he was unable to contact his commanding officer, who was on another island, he consequently had no money with which to feed or pay his men.

I spent five days on Marinduque during which time I obtained a new outfit of clothing. The garrison had a radio, but it was impossible to contact any other island where American commands were reported.

It had been reported that inter-island boats were stopping at different towns on the east coast of the island of Mindoro and picking up supplies to be taken to Corregidor. I decided to try to catch one of these boats, and about 0100 of February 17th sailed on a small *batil* (a type of native sailing boat) for Pinamilayan Mindoro. In the middle of the morning we beached, and I went to the Philippine constabulary headquarters to stay. They had no information on boats going to Corregidor but did say that there were Americans on the island of Panay.

The constabulary was in much the same state as those on the previous island. The commander did have a definite plan, however, for falling back into the hills when the Japs landed, and from there he intended to carry on guerrilla warfare until help arrived.

After three days at the constabulary I hopped on a truck going to the town of Bangabong about 30 miles to the south. From there I caught a sailboat going to Panay Island and arrived there the afternoon of February 22nd.

As the boat neared the beach Filipinos on shore signaled us to lower our sails. Before long they were aboard inspecting us. They were the civilian home guard, and I found later that they were organized throughout the island, primarily to watch the coast.

The chief of police of the town took me into his custody with the suspicion that I was a German spy. From time to time around the islands Germans had been reported posing as Americans. Also, incidentally, German officers had been reported seen by the natives landing with the Japs on different parts of Luzon.

After persuading the chief of police that I was not a spy, I caught a ride the next morning to the headquarters of the 61st Philippine Army Division. American officers who had been sent as instructors to Philippine Army units in August, 1941, were then in command of those units. This was the first organized unit with Americans in it that I had seen for two months. It was a great treat just to talk with them. Also, they still had a few luxuries such as cigarettes and canned food and were still eating bread and drinking coffee.

Photo, Courtesy National Geographic Society

"This is a typical outrigger, similar to the one in which I sailed from Bongabong, Mindora, to Panay, February 21st and 22d, 1942." At that time no Japs had landed on Panay.

The first week on Panay I spent in Iloilo City—getting a few necessities and gaining a little weight. It was hard to believe that I could really ride in an automobile and walk around the city without having to wonder if there were Japs around the next corner.

At the end of the week I went to the town of Janiuay in central Iloilo Province, and reported to the headquarters of the 63d Philippine Infantry Regiment, with which I was to serve as S-3.

During the first days of the war everyone had been hopeful that the Americans would get through to the Philippines, but by that time—the first of March—almost everyone felt that it was only a matter of time before the Japs took over completely.

The presence of these soldiers throughout the southern islands, however, denied to the Japs the use of the islands from the outbreak of the war until about the middle of April, 1942. Till the very last these islands supplied Corregidor and Bataan with food.

EDITOR: Major Whitehead's account of his experience as an officer with the Philippine Army on Panay—Mar. 1-May 25, 1942—will appear in the September-October issue of The Cavalry Journal.

Photo, courtesy, *Marine Corps Gazette*

"From the point of view of patrolling, all jungle swamps are undesirable. . . . Water depths vary from a few inches to well over a man's head and submerged roots make tripping a persistent probability."

The author, Assistant G-2, Corps Headquarters, "Somewhere in New Guinea," participated in jungle operations with the Australians as well as in the recent Hollandia landings.

Eyes, Ears and Nose
In Jungle Patrolling

IN order to appreciate the unique importance of eyes, ears and nose in jungle patrolling, as compared to other types of patrolling, it is necessary first to appreciate the relevant terrain problems presented by the jungle, and second to know the Jap's pertinent strengths and weaknesses.

Terrain Problems

Tropical jungle, in the broad sense, includes rain forests, swamps and patches of kunai grass. Rain forests are normally found anywhere in jungle areas from the flat coastal plains to mountainous areas up to about 5,000 feet. Over 5,000 feet, rain forest usually turns into moss forest—a moss enshrouded tomb of rocks, trees, and minor vegetation, barren of all wild life. Since most of our operations against the Japanese have been in limited coastal areas, moss forests have played an insignificant rôle. The sole exception was a portion of the Owen Stanley Campaign in 1942.

The vegetation of rain forests varies in thickness from densely tangled roots, vines and scrub to more or less open forest. In areas of thick vegetation, it is often impossible for a man or a small patrol to move off the native tracks (assuming there are some) without cutting their way with a machette. Troop movements in such areas are, of course, completely trackbound. In the more open areas, movement off tracks is, in varying degrees, easier.

All rain forests are characterized by thick overhead cover which makes for a dark, dank, dripping interior. Tracks are always muddy.

Kunai patches of varying sizes are found scattered throughout rain forests. Kunai grass often grows to over twelve feet; however, the average height is probably somewhere between three and five feet. Visibility is dependent on the height of the grass, while movement, generally speaking, is relatively easy.

Swamps are common on costal plains and are particularly bad near rivers. From the point of view of patrolling, all jungle swamps are undesirable. Their dense vegetation negates visibility and makes movement difficult. Further, water depths vary from a few inches to well over a man's head, and submerged roots, etc., make tripping a persistent probability. Lastly, ravenous swarms of insects and a formidable assortment of crocodiles and snakes add emphasis to the undesirability of swamps.

If any one characteristic of jungle terrain may be selected as dominant from the point of view of patrolling, thickness of vegetation would probably be named.

Thickness of vegetation frequently cuts down all visibility to a matter of feet which means that movement on tracks is subject to ambushes or mutually unplanned face-to-face contacts. Any movement off the tracks is tediously slow and in constant danger of loss of control and/or direction. Further, this element of vegetative density has been in the past both a direct and indirect factor in preventing the collection of accurate material for mapping purposes. Today, the result is that any and all available maps are "fairly accurate" at best, with current aerial photos limited in usefulness because of the thick overhead cover found in all but kunai grass.

Jap Strengths

And now for the Jap's pertinent strengths and weaknesses.

The Jap has long recognized the importance of patrolling in jungle warfare, and has made very much a point of stressing it in his training. In every operation to date, he has capitalized on this training. It follows, that his counterpatrolling is also excellent.

Another Japanese asset is his patience and excellent fire discipline. Stories of individual Japs standing chin-deep in swamp-slime, patiently watching for many hours in order to select an important individual (such as a unit commander) at which to snipe, are legendary. Also legendary is the Japs' skill and application of camouflage and fire discipline in concealing the actual strength in given areas.

Still another Jap strength is his utilization of natives. Natives, of course, know the jungle as our American Indians knew the forests of the "American wilderness." The average natives are dirty irresponsible savages, but on patrol they are invaluable. They can track a shadow, pass through impassable terrain and invariably see the invisible.

We also use natives in our training and operations. In Papua, because most of them spoke only their native dialect and pidgin English, the Americans and Aus-

by Major Robert M. White, II

tralians had an advantage over the Jap, who with the exception of a few English speaking individuals, had to converse with natives in sign language. In Dutch New Guinea the natives speak Malayan, so the Allies and Japs probably break about even.

Unfortunately, or fortunately, natives are not very well informed about such worldly matters as totalitarianism vs. democracy, the Four Freedoms, or the Greater East Asia. Their only interest in the strange yellow and/or white invaders of their jungles, is the rice and tobacco paid for services rendered. As a whole they have no loyalty as we know it. However, the point to be remembered is that while their loyalty is not ironclad, their value in patrol work is pure gold.

The next pertinent Jap strength is his knowledge of our weaknesses. He dotes on our national habit of cigarette smoking and also on our loud talking when we think "there is not a Nip in miles" (famous last words).

It is difficult to classify specifically this next point as a strength or weakness but, whichever it is, it is paramount in jungle operations. Above all else, the Nip can be expected to do the unexpected. Time after time, he has gone to great expense in lives and matériel, to attempt the obviously impossible or to gain some hopelessly meager end. Briefly, when patrolling against him, be ready for anything. It will probably happen.

Jap Weaknesses

One definite Jap weakness is his aversion to hand-to-hand fighting. Despite his much touted prowess with the bayonet and skill at jujitsu, the fact remains that he does not like to tackle white men who average more weight, height and reach. It is true that a bunch of Nips can get together and work themselves into a hysterical pitch of patriotic fervor and, amid the screaming of Banzais, charge into the maw of our machine guns or even overrun our forward positions. But patrol work does not usually lend itself to the necessary revival meetings for these spiritual shots in the arm. (Admittedly, there are exceptions to the above weakness, and because they are exceptions they receive a maximum of publicity.)

Another Jap weakness is his inability to absorb surprise. For some reason, probably his innate lack of emotional balance, the Nip goes completely berserk when caught with his guard down. Squealing like pigs and scattering like quail is usually their SOP for the unexpected attack. Just to keep the books straight, however, it should be pointed out that if he gets a respite, he will quickly reorganize and start thinking and doing something about saving face.

Last of this general list of Japanese weaknesses is the fact that he does not like jungle operations any better than we do. All too often accounts have painted a picture of the typical Jap GI relishing the eternal rain, the stench, the mud, the bugs and the heat that are the jungle.

With the above points about the Jap and the jungle in mind, we are now ready to illustrate the influence these points have on the importance of eyes, ears and nose in jungle patrolling.

Example of a Typical Jungle Patrol

Let us assume a typical tactical situation and one of its typical patrol missions:

A beachhead has been established, and after the usual counterattacks, the enemy has withdrawn, at least temporarily.

As always, the task force commander wants more information regarding enemy activity and tracks leading to the beachhead perimeter.

The only available map is the usual aerial photomap with annotations made by a prospector who travelled through the area some five years ago.

Our particular patrol is given the mission of reconnoitering track No. 4 to track junction No. 4-6 and reporting within 48 hours: (1) enemy strength, composition and disposition on the track, and (2) general track information (such as time travelled over various sections, condition of bridges and/or stream crossings, steepness of grades, etc.).

The patrol will consist of one noncommissioned officer and seven men. It will be assumed that native scouts are otherwise occupied and will not accompany our patrol. Incidentally, the Jap favors using four or five men on patrol missions such as the above; however, our experience is that all conditions being equal, the fire power of eight men is practical insurance in case of unavoidable contact.

In briefing our patrol leader, it has been pointed out that track No. 4 is the only known track covering the general route and will have to be used on the return trip. The track is reported to be tortuous, and since our photomap and annotations agree that it starts out through a swamp, crosses a patched kunai area and enters a thick rain forest, it seems logical to expect all the handicaps of a tortuous track at least through the swamp and rain forest.

After being briefed, a process during which the patrol leader received such routine details as time of departure, etc., our patrol leader calls together his men, inspects them for physical condition, gives them the mission, the uniform and equipment to be worn, the amount of ammunition and rations to be carried, and tells them to reassemble at an exact time (usually about five minutes before the time of departure).

On reassembling, the patrol leader again inspects his men, repeats the mission and makes sure that the chain of command is thoroughly understood. Different patrol leaders have various pet ideas or improvisations of which they usually remind their men at this time. A very practical example is the use of a less conspicuous signal for "enemy in sight" than the FM signal of upraised rifle.

Press Assn.

"A beachhead has been established and . . . as always, the task force commander wants more information regarding enemy activity and tracks leading to the beachhead perimeter." Photo shows landing at Cape Gloucester, New Britain, for second big invasion operation on the island.

Leaving the outpost, the patrol enters the swamp in single-file formation, because the vegetation is too thick for the safer "wedge" or "diamond" formation. The track proves tortuous, so the interval between elements of the patrol is seldom more than a few yards. Obviously, any unexpected contact with the enemy on such a track will be more or less a face-to-face "six gun draw." Therefore, the No. 1 Point Man is the most efficient scout in the patrol and is armed with a tommy gun.

Even though the patrol is in single file formation, each man is assigned the same duties that he would have were a more open formation possible. For example, the No. 1 point man observes ground to the front, the No. 2 point man observes sniper to the front; the next two men (skipping the patrol leader who probably is concentrating on control and the terrain) observes ground and sniper, respectively, to the right; the next two men observe to the left, and so-on throughout the squad with the tailing men observing ground and sniper to the rear. A "get-away" man, as such, is seldom designated until trouble develops. All too often the trouble will come from the rear in which case one of your point men may be the logical selection for a get-away mission.

The reason that it is possible for the Nip to let us get past him so that he can open fire on our backs, is, again, the denseness of the vegetation. "Observation" (EYES), such as ground or sniper to the right, means the close, thorough search for minute details such as newly barked root, newly bent grass or a broken twig, an unusual bend to a limb, a scuffed tree-trunk, etc. Actually to see a Jap hiding in thick vegetation would be a very rare experience, indeed.

As our patrol progresses, the going becomes harder. The men are now wading in depths between their knees and waists; however, the track is well marked so there is little danger of getting lost. From time to time the point man halts the patrol for a "listening stop" (EARS). Wading through swamp, with its submerged roots and other obstacles, is noisy business, both for you and the enemy. Further, bird and insect noises or lack thereof may well indicate what lies ahead.

After about forty minutes, the patrol leader signals a break. The men are winded. There is no place to sit or lie down (one of many reasons that swamps are not used for troop movements of any size). The men lean against tree trunks and roots, always facing their assigned direction. One of the men is new on patrols. He lights a cigarette and starts griping about the insects. The patrol leader loses no time in making the man put out his cigarette, carefully dispose of the butt and the carelessly tossed match. In the stagnant or slow drifting air of swamps and rain forests, cigarette smoke may linger for hours. Any passing enemy patrol would be sure to note it (NOSE). Also, they might note the butt or match (EYES). As for talking, it interferes with listening (EARS).

Resuming its march, our patrol progresses slowly with careful observation and frequent listening stops. After about thirty minutes, the No. 1 point man halts the patrol and signals for the patrol leader to come forward. Ahead is the edge of the swamp and the first kunai patch.

The patrol leader looks over the situation and dispatches one scout to a nearby kunai knoll from which he can observe the terrain and track ahead. The patrol is then moved off the track and upon reaching dry ground some fifty yards from where the track enters the kunai (nothing would be gained by leaving footprints in ob-

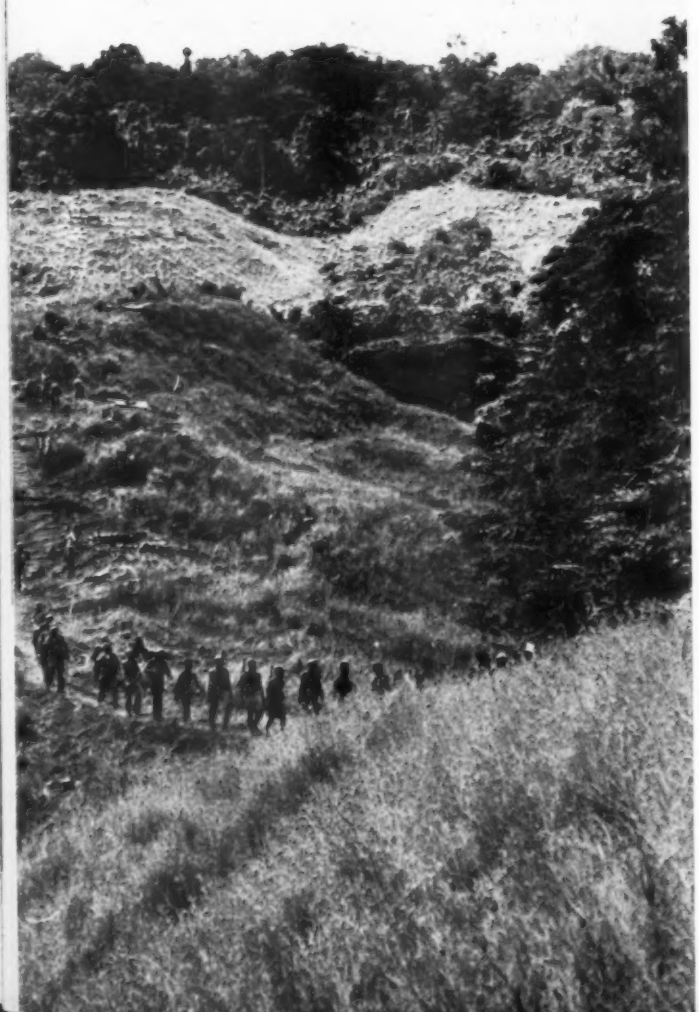
vious places) (EYES), it goes into a diamond formation and takes cover.

While waiting for the scout to return, the men camouflage their helmets and gear with kunai. The patrol leader makes a note of time travelled and condition of the track in the swamp. Checking his map, he finds that this first kunai patch is about half a mile across and several thousand yards long. He decides to follow the track straight across it to the first copse.

The scout returns and reports that he saw no signs of the enemy, that the track looks dry and that the grass averages about four feet high. The scout further reports that it will be possible, because of the undulating ground, to approach within about 100 yards of the first copse without being observed from it.

Before moving out, the patrol leader assigns fresh men to the point, announces a maximum 50 yard interval between elements and indicates their present position as a rendezvous area.

"Kunai patches of varying sizes are found scattered throughout rain forests. Kunai grass often grows to over twelve feet; however the average height is somewhere between three and five feet." Rain forest is in background.
Press Assn.



As the patrol approaches the first copse, it is halted and observation positions are selected and occupied. The copse looks innocent, so the scouts approach it under constant cover from a part of the patrol, while the remainder of the patrol continues observation to the rear and flanks. Observation (EYES) in kunai areas usually concentrates on such items as sudden flushing of birds, the bending of grass against the wind, and close scrutiny of areas in which the terrain has tactical possibilities.

The scouts enter the copse and on finding it clear, signal the patrol forward. Following the same routine of observation and reconnaissance of all suspicious areas, the patrol approaches the main rain forest shortly before sundown.

After the scouts have investigated the edge of the forest, the patrol takes up a position about fifty yards down-wind from where the track enters the forest. While the men are changing their camouflage from grass to tree or plant leaves and taking advantage of their down-wind position to enjoy a smoke, the patrol leader makes the necessary notes on time-traveled, condition of the track, etc.

Ten minutes later and with the best scout back in the No. 1 point position, the patrol resumes its march. The diamond formation is continued until vegetation necessitates closing in to a single-file formation. As the track becomes more tortuous the interval between elements is necessarily cut down.

Suddenly, the No. 1 point man halts the patrol and signals for the patrol leader to come forward. Ahead are footprints on the track. The patrol is advanced and goes into an all-around defensive position while the patrol leader and his best "tracker" inspect the footprints.

The prints are found to have been made within the past hour. Whoever made them came down the track and then turned back, deliberately smudging some of the footprints. Probably seven or eight men were in the group. Some of the prints look like American GI shoes. A careful search (EYES) is made in the weeds beside the track and a half smudged print of a shoe with a split toe is found. This print, of course, tells the whole story. The Jap likes our shoes. He probably had acquired some from our dead, came down the track and then as he back-tracked, deliberately smudged the Jap shoe prints.

There is no indication of hurry, so it is doubtful if the Nip turned back because he sighted our patrol. More probably, he was ready to bivouac for the night and is somewhere up ahead in the rain forest off the track. It is pretty much SOP for patrols in a thick rain forest at dusk, to confuse their tracks, then go into the bush for several hundred yards and get a good night's sleep knowing that they cannot be tracked down in the bush after dark.

Press Assn.

"Thickness of vegetation frequently cuts down all visibility to a matter of feet which means that movement on tracks is subject to ambushes or mutually unplanned face-to-face contact." Here a patrol pushes through a New Britain jungle in pursuit of Japs. The patrol leader carries a hand grenade as well as a submachine gun.

Our patrol leader glances at his watch and notes that he has about an hour and fifteen minutes of daylight left. The adjacent terrain is favorable, so he backtracks his patrol and, after making a false entrance on the up-wind side of the track, sets up a bivouac some three hundred yards down-wind from the track.

The leader then dispatches four men to spend the next forty minutes seeing if they can learn anything about the enemy patrol. They return just as darkness is falling, and report that they located the enemy patrol. It is bivouacked about two hundred yards up-wind from the track, our sub-patrol had smelled their cooking fire (NOSE). Our men could not get close enough to see how many they numbered, but from their talking, estimated about ten (EARS). The track up ahead bears to the right, skirts a hill and then enters a stream bed. . . .

This is a good place to discontinue our illustration of the practical application of eyes, ears and nose in jungle patrolling. Any further details would be mere variations in application except in case of special developments which are beyond the scope of this article.

Night Patrolling

A couple of points should be mentioned about night patrolling. While ears are important in night jungle work, they require careful training and must be used in conjunction with eyes.

To begin with, the jungle at night is never quiet. A "deathly stillness" would be unusual, suspiciously so. Normally, the jungle at night is a symphony of bird calls, humming insects, the croaking of frogs, cricket "scratchings," the startling crash of palm fronds, etc. On patrol or outpost, a man must know this "symphony" and must be able to detect the faintest variation in it. But knowing the "symphony" is not enough for jungle night work. You must also know how to move through the jungle without causing more than a minimum of variation in night noises. Herein, night vision becomes important.

Probably the most important thing to remember about night vision is that it takes your eyes about a half-hour in darkness to reach a maximum efficiency. It must be borne in mind, however, that the slightest light (even the pale reflections of a radium watch dial) temporarily impairs night vision. Lastly, it is easier to see an object at night if you do not look directly at it but rather to one side of it.

All of these points are "minor details." Yet, in jungle patrolling, magnitude of minutiae asserts itself via eyes, ears and nose, in tipping the scale between success or failure.

"Patrols assume a greater importance in the jungle than elsewhere, and men sent out on such missions are examined beforehand to make certain that they are in top physical condition before assuming a hazardous mission.

"To add to the difficulties of jungle fighting, much of the terrain in which the patrols move is virtually uncharted, and maps are frequently of little use. The ground has to be fine-combed a little at a time so that no Jap machine-gun nest is passed undetected."—Report of an observer with the Americal Infantry Division, Bougainville Island, May 1944.

Sovfoto

Soviet cavalry moves cross-country, over rivers and swamps, through woods and appears suddenly in the enemy's rear or flank. Men are armed with tommy guns, automatic rifles and pistols. Cavalry led the rapid advance on Odessa.

Kuban Cossacks*

by Major V. Kirsanov

THE successful advance of the Red Army's main forces – especially infantry and artillery – upon Odessa and the Dnestr was greatly facilitated by the skilful maneuvering of the Kuban Cossacks. In spite of the spring thaws and rain-sodden roads and fields, they advanced hundreds of miles, carried broad and swollen rivers in their stride, and fought always in masterly style. Often after swimming a river they would appear suddenly in the enemy's rear, cut his lines of retreat and, charging the retreating columns, hew or trample down all who refused to surrender.

As a rule, when dislodged from their intermediate lines, the Germans and Romanians tried to form a column and resume their hasty retreat westward. But the Cossacks, following hard on their heels, gave them no chance to consolidate, but penetrated again into the rear, split up the enemy forces, and disrupted coördination between them.

The dashing attacks by cavalrymen, in their black shaggy capes with their crimson hoods streaming behind them, struck terror into the heart of the enemy. And always the enemy's attempts to break contact with the pursuing Cossacks failed. They appeared everywhere, and nothing was able to stop their impetuous onslaught.

Pursuit

When the enemy's defenses were first breached and he began to retreat, the Cossacks broke through into the open and sped forward. In spite of the impassable roads, there were days when they advanced as much as 30 miles.

On one occasion, Captain Eugene Kornilov's Cossacks, after executing an outflanking movement, dislodged the enemy from two large villages lying respectively to the left and right of an important highroad. The Germans took advantage of the gathering dusk to form a column and speed westward. Kornilov guessed the enemy's intention and proceeded along a parallel country road to cut him off.

At dawn the Cossacks swerved onto the highroad near the village in which a German garrison was stationed. They divided into two detachments which planned to attack simultaneously both the garrison, peacefully asleep in the village, and the column trying so hard to escape pursuit. One detachment of Kubans, charging into town at the gallop, appeared so unexpectedly that the officer on duty had no time in which

*By cable to *The Cavalry Journal* from War Department, U.S.S.R., Moscow, May 24, 1944.

to give the garrison an alarm, and most of the German soldiers and officers surrendered. Meanwhile, the other detachment just as boldly attacked the column still on the highway and worn out by the night's march. After a brief and vigorous fight two enemy battalions were demolished.

Continuing their advance, Kornilov's Cossacks by midday reached a town and railway station where a large enemy force was concentrated. Knowing the value of surprise, Kornilov decided to attack straight from the march. While the two-hour battle for the railway station was proceeding, another cavalry detachment burst into the town from the west. The Germans made a desperate stand and hurled panzers and self-propelled guns against the Cossacks. But it was too late. The Cossacks had the initiative. They split up the enemy's forces and destroyed them piecemeal.

Having rested their horses after this battle, Kornilov's Cossacks again sped forward, and emerged in different places on roads along which the enemy was still retreating. Again attacking enemy columns and transports, the Cossacks compelled the Germans to abandon arms, ammunition, and motor vehicles.

A Tank-Cavalry Raid

In their bold raids into the enemy's rear, the Kuban Cossacks often coöperated with tanks. One day scouts reported that at a certain railway station the enemy was loading tanks, ammunition, and equipment onto trains. Soviet tanks and cavalry set out together on a joint raid. A few hours later, the tanks reached the station, opened fire on the trains and threw the Germans into complete confusion. At this juncture Lieutenant Anatoly Kozlov's cavalry squadron suddenly invaded the station and began hewing down Germans. Many of the German soldiers opened fire with tommy guns and machine guns from behind the trains. Thereupon the cavalrymen dismounted and, following behind the tanks, soon cleared the station and captured much rich booty.

From the Dnepr to the Dnestr

The march of the Kuban Cossacks from the Dnepr to the Dnestr abounded in instances of supreme courage and daring. They advanced day and night and often engaged the enemy straight from the march. Wielding their sabers, they often assaulted enemy strong points on foot; and they also attacked enemy under cover of their own tanks.

The Germans learned at a heavy price that Soviet cavalry is a formidable force and that the sudden appearance of Kuban Cossacks on the roads of war throws the enemy into complete consternation.

General Pliyev's Cossack Guards*

by Bayev

DURING the whole course of the war, cavalry probably never had to display such activity as during the Soviet advance through the Ukraine. As enemy

*By cable to *The Cavalry Journal* from War Department, U.S.S.R., Moscow, May 6, 1944.

Lt. General A. Pliyev, commander of a unit of Cossacks from the Don steppes, earned an outstanding reputation in the Red Army for victories gained against the Germans on the road to Odessa. His rapid pursuit frustrated the enemy.

Sovfoto Radiophoto

Sovfoto Radiophoto

A Cossack unit on the march. Its tireless members can ride for many hours without rest and often go into battle straight from the march. Sudden appearance of cavalrymen in enemy's rear or flank creates panic among enemy troops.

defenses crumbled everywhere, mobile forces were afforded broad scope for action. Cavalry forces under General Pliyev, Hero of the Soviet Union, particularly distinguished themselves in a number of widescale offensive operations.

When the enemy's defenses were broken and his troops began to withdraw, General Pliyev's Cossacks proved their worth and excellent training in their hot pursuit of the routed German Sixth Army. On the muddy spring roads, in coördination with other units, they dislodged Germans from intermediate positions, and inflicted heavy losses in men and arms.

Encirclement

During these battles, cavalry displayed model coöperation with infantry. When Soviet infantry units enveloped Germans in a half circle the Cossacks, dealing a stunning blow from north to south, split the enemy force in two. Despite the strength and numbers of the German force and despite the support of the Luftwaffe, isolated German divisions sustained heavy casualties and soon ceded their favorable positions.

Mounted troops fought with particular foresight and daring during the encirclement of Germans in the area of Bereznegovatoye. Retreating in columns, the enemy attempted to shake off the Soviet troops, but the Soviet units caught up with the Germans and forced them to take up positions for defense. Meanwhile, the horsemen under General Pliyev emerged in the rear of the Germans and, cutting off their retreat, completed the encirclement.

After that, the German command decided to break through the Cossack lines and, under cover of tanks and self-propelled guns on the east and northeast, moved its main force westward and southwestward. But in both directions, the Germans encountered deadly fire from guns and mortars, particularly from self-propelled guns. The enemy was stopped and undertook a number of desperate counterattacks but without avail. The German grouping could not get out from the ring however much it tried. Only some staff officers and small groups of soldiers managed to escape through steep ravines during the night, and they abandoned all of their armaments in doing so. The main force was annihilated.

German divisions established northeast of the village of Bashtanka met a similar fate. There the paths of retreat were also cut. The Germans, forming in columns, attempted to force a gap with mobile detachments. A fierce battle raged all night. Enemy mobile detachments and motorized forces made one final effort to force a passage to a railway in the general direction of Nikolayev. Enemy units were particularly active in an effort to break through to the village of Shevchenkovsky. This attempt, too, failed in the face of fire from Cossack guns, machine guns, and tommy guns.

While the Germans launched their counterattacks, several cavalry units moved up to the village of Shevchenkovsky unobserved and there established themselves. In the morning the German advance units were allowed to pass unharassed, and the main force columns following in their wake fell unaware into the trap.

Then began the extermination of the enemy with all means at hand. The Germans counterattacked in various directions but to no avail. Cossacks, supported by tanks and infantry, dealt flanking blows, then split the enemy and annihilated isolated groups. The commanders of two German regiments that had succeeded in forcing a passage westward, hurried to inform their command that they had escaped the ring, but in the approaches to Ingul they were attacked from the rear by Cossacks and annihilated.

Pursuit

Soon after this incident the Cossacks again displayed their particular fighting qualities. In their main rôle of pursuit, they frustrated the enemy's attempt to establish himself in intermediate positions, particularly in water barriers, and forced the Germans to retreat to Odessa.

Interesting in this respect were the battles fought on March 31st. Carrying both artillery and mortars, General Pliyev's units galloped to Berezovka. The Germans called in their infantry, tank, and artillery reserves, which established themselves in strong points along the highway. Stubborn fighting developed, and the Germans, supported by air force undertook a number of counterattacks, but the Cossacks' increasing pressure dislodged the enemy before the end of the day. The Germans, falling back to Coppice, surrounded the railway embankment in a half circle and opened up a barrage of fire. Following this, one Soviet unit by-passed Coppice and dealt a blow in the German flank. Stunned by this unexpected assault, the Germans left all of their guns and fled. During this fighting around Berezovka, the Germans sustained heavy losses in killed and prisoners.

Developing this success, the units of General Pliyev advanced approximately 20 miles in 24 hours and emerged on new German positions. Although the rugged terrain was favorable for the German defense, these positions had to be taken. The Cossacks devoted all of their efforts to bringing up artillery, ammunition, and fuel over poor, muddy roads. The German defenses were soon broken, and the Cossacks, fighting incessantly in rain and sleet, continued their advance to the southwestward. The plan was to emerge on the Dnestr, envelope the enemy on a wide front, and cut off the German troops in Odessa.

On one sector during this advance the Cossacks fought their way to the rear of the Germans and appeared on the river opposite a big village. The squadron under Captain Romanuka forced the river and massed in a ravine without being observed by the enemy. There the Cossacks dismounted and wriggled up to the village, which they discovered was occupied by the enemy. Romanuk's men opened fire, and fighting developed. Meanwhile, the whole unit of Cossacks forced the river and after making a circuit of the retreating enemy column, dealt a decisive blow from the rear. The raid was so sudden that not even the German staff had time to get away, and all officers were taken prisoner.

Cossack on the march halt to water horses. These mounted units often force a river to deal decisive blow to enemy's rear.

Sovfoto Radiophoto

Cavalry in This War

IN recent weeks, the official German communiqués have repeatedly mentioned encounters with powerful formations of Soviet cavalry as well as successful operations by cavalry units of our own (German).

Cavalry in World Armies After World War I

After the First World War, in view of increasing motorization, debate was rife regarding the justification of the further employment of cavalry. England, except for a few squadrons of cavalry in her home army for parade purposes, had given up cavalry completely in favor of motorized troops. France was engaged in transforming her cavalry regiments into motorized units (dragons portés). Soviet Russia, who, in her revolutionary wars and her Polish campaign, had had good results with her mounted forces, clung to powerful cavalry formations. Poland and Romania followed her example.[1] Italy chose a middle course. Germany, by the treaty of peace which had left her relatively powerful cavalry forces (because they were allegedly harmless) but which had imposed close restrictions on its motorization, found herself with her hands tied.

After again obtaining her military freedom, Germany organized the mounted units from the hundred-thousand-man army into cavalry regiments, as a foundation for the reconnaissance battalions that were to be created in case of mobilization, and these, combined together into a division, constituted a sort of army cavalry for employment on the eastern front. Nowhere did there exist any doubt that the days of mass attacks were past, that from now on it was the mission of the cavalry to get its weapons in a hurry over every sort of terrain and into action at the decisive spot.

German Cavalry in World War II

And so, in the present war, cavalry has in truth come up to the expectations that were entertained with regard to it in those places where—as in the nearly trackless expanses of the eastern theater of operations[2]—marshy and brush-covered terrain, sandy steppes, and snow-covered areas render the advance difficult for its sister arms, where rivers and streams constitute serious obstacles to these other arms yet can be crossed without bridges or ferries by the cavalry, by swimming or fording. *It was especially to the German cavalry division that we were indebted for the quick crossing of the Narev, the occupation of Holland, and the blockading of the fortified area of Paris on the west at the beginning of the war.*

The reconnaissance battalions and the cavalry platoons of the infantry regiments, by close-range and combat reconnaissance, were able to a great degree to complete the picture that had been obtained of the enemy by means of air and motorized reconnaissance. Also a few minor attacks were successfully carried out by them all alone.

Romanian and Italian cavalry units also have done outstanding work in the eastern theater of operations. Italian cavalry even carried out a major attack on Soviet infantry.

Soviet Cavalry

The Soviets have made very heavy use of their cavalry, and made a great deal over it. The Swedish review, *Svensk-Ryttartidning*, published recently, in an interview with a Soviet cavalry officer, noteworthy details regarding its organization and methods of fighting. We read that "the cavalry of the Soviet Union has at its disposal, in addition to the usual light and heavy weapons, also its own tanks, planes, armored trains, artillery, and engineers. Its reserves are trained, even in premilitary courses for youths, in the peculiarities of the branch of service in which they are to be employed in the future.

EDITOR'S NOTES:

[1]Although Poland and Romania retained large cavalry forces, these troops were ill-equipped and trained only in cavalry tactics that were entirely inadequate for modern war. See THE CAVALRY JOURNAL, page 8, January-February, 1940—Polish cavalry armed with lances and minus supporting weapons; also, "The Tank-Cavalry Team," January-February, 1944, which describes the development of modern Soviet cavalry tactics based on the principles of the Cossack *lava* and American Civil War *raids*.

[2]See "German Cavalry in Russia, 1941"—a short account of German cavalry protecting the flank of an armored corps from the Bug River to the Pripet Marshes, THE CAVALRY JOURNAL, May-June, 1943.

★Reprinted by courtesy of *The Military Review*. Translated at the Command and General Staff School from a German article in *Münchner Neueste Nachrichten* 14 March 1944.

Cavalry on Soviet Southern Front

MOSCOW*, July 19—By M. S. Handler, United Press Staff Correspondent—*Marshal Ivan Konev's First Ukrainian Army, pouring through a 124-mile hole in Germany's* southeastern *defenses, outflanked the fortress of Lwow from the north and prepared to smash across the Bug River into the puppet Government General of Poland today in a new offensive aimed squarely at the Reich.

Marshal Konev, taking over the First Ukrainian Army, hurled his massed tanks, cavalry, artillery, and infantry against the outer defenses of Lwow four days ago on a 124-mile front.

German prisoners expressed amazement at the comparative ease with which the Soviets reached the "Prince Eugen Line" along the Bug.

by Lieutenant Colonel Benary,
German Army, Retired

They come mostly from the rural districts; hence have been used to horses from their childhood up.

"The horses of the Soviet cavalry may at times not possess a pleasing appearance, but they are inured to the inclemencies of the weather, possess great endurance, and are capable in every respect of fulfilling the task assigned to them. They are trained to remain standing where the riders place them. As soon as the rider has gone into position on the gallop and has separated himself from the horse by a leap over its head, his horse lies down in the protected position *behind* him (no longer, as formerly in the case of the Cossacks, in front of him as a sand bag and carbine rest). If the horses are to seek the shelter of cover farther to the rear, they are assembled loose back of the front and driven to the rear by a soldier who acts as a herdsman in the manner they have been accustomed to all their lives.

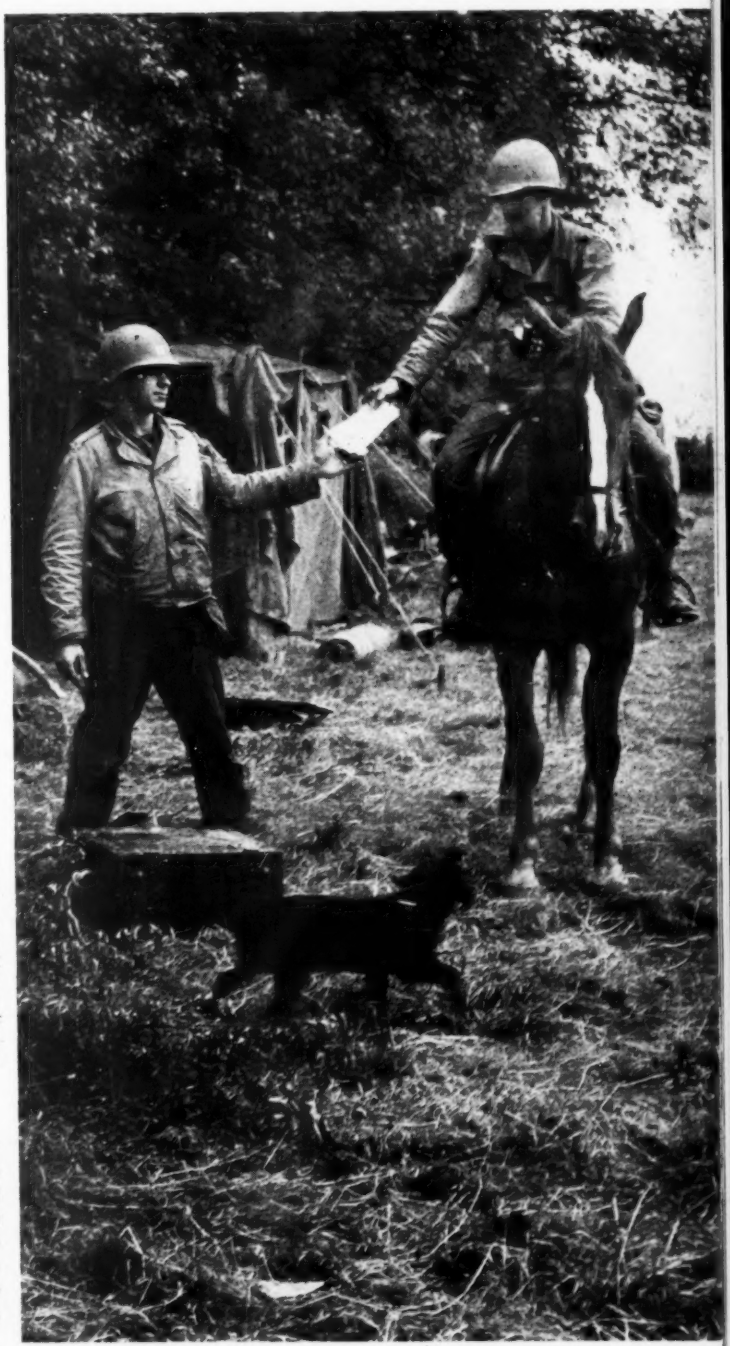
"The Soviet Field Regulations state with regard to the missions of the cavalry: 'The strategic cavalry is able to carry on the fight independently. It is thoroughly schooled to coöperate with infantry, tank, and air formations. Attack in any situation is the guiding principle of their action. On the flanks and in the rear of the enemy is where they should preferably be employed.' "

The Swedish review forgets that the Soviets have been able to employ their cavalry successfully only where terrain and weather were particularly favorable —where the cavalry plunged into areas in which the German points of resistance were widely separated. In those cases where they charged powerful formations, especially armored formations, they came out the losers.[3]

Present Increase in German Cavalry

The combat strength of the cavalry at the disposal of the armies of Greater Germany, with which Cossack units have associated themselves, has been increased during the course of the present war. Their equipment with machine guns is about like that of the infantry regiment. In the National-Socialist Cavalry Corps, youths who are familiar with horses are being trained, and with the winning of the diploma the way is opened for them to enlist as volunteers in the cavalry. Future officers are trained at the Cavalry School. In the breeding of horses, efforts are being increased, on the basis of the lessons learned on the eastern front, to toughen the young animals.

[3]Facts belie the statements in this paragraph. Soviet cavalry has been successfully employed in large numbers from the mountains of the Caucasus to the plains of the Ukraine and more recently the approaches to the Baltic. The first outstanding defeat of a German force in this war was the rout of General von Kleyst's First Armored Tank Army by Soviet cavalry under Colonel General Cherevichenko at the first battle of Rostov, November 28, 1941. Other similar operations of Soviet cavalry since that time are too numerous to list here. See "Soviet Cavalry 1918-1943," The Cavalry Journal, March-April, 1943. See editorial, same issue. See "Encirclement at Stalingrad," July-August, 1943; also "On the Road to Odessa" and "Vital Rôle of Soviet Cavalry," this issue.



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A German cavalry horse captured in Normandy is immediately utilized by American Rangers. Undisclosed numbers of German cavalrymen and mounts were surprised by the sudden descent of paratroops. Germany has been increasing her cavalry as a result of her experiences on the Eastern Front. Russians report, however, the Germans lack tactical conception for proper handling of large cavalry units.

U. S. Signal Corps Photo

Breaking Through German Ra

by Major A. Bukirev, Red Army

WHEN retreating under the pressure of the Red Army, the Germans fight rearguard actions, accompanied by frequent counterattacks. At the same time they make every effort to strengthen their rear defense lines, at which they hope to stem the advance of the Soviet troops. To these lines they withdraw their main forces in order to prepare them to give decisive battle.

The Germans as a rule construct their rear defense lines beyond a river, or on a ridge of hills in front of a river. Such a line, if the enemy is allowed time to perfect it, may easily become a main defense line, behind which new rear lines are built. To break through a rear defense line demands considerable effort on the part of the attacking forces.

Information and Reconnaissance

Long before the enemy's rear defense lines are reached, the attacking side must possess information regarding the character of the defense. Considerable knowledge may be gained from aerial photographs and from the examination of prisoners and deserters. This, however, is not enough. Recently, on one sector of the west bank of the Dnepr, a raid was organized into the enemy's rear. The tank troops which took part in the raid, besides inflicting heavy losses on the enemy, brought back valuable information regarding his defenses.

When the Soviet troops reached the River Boromlya they encountered stiff resistance at a prepared enemy defense line. This did not come as a surprise, but in order not to allow the enemy time to consolidate his position, and also with the purpose of reconnoitering his defenses, day and night reconnaissance was instituted. The reconnaissance parties included artillerymen. In addition, tank groups were detailed to conduct reconnaissance in force with the purpose of ascertaining the disposition of the enemy's antitank guns. The Germans got the impression that the Soviet troops intended to attack their positions straight from the march, with the result that they disclosed their fire system and the location of their tank and antitank reserves.

From continual but brief attacks, reconnaissances and sorties, combined with constant air action, full information was obtained regarding the enemy's position and strength, and at the same time he was prevented from perfecting his defenses. Only after gathering all necessary data did the Soviet troops attempt to break through the enemy's rear defense line.

Fire Power

Main reliance in effecting the breach was placed in the fire weapons. How carefully and thoroughly fire was planned and prepared determined how swiftly and to what depth the infantry and tanks would be able to penetrate into the enemy's defense positions.

When numerous targets have been reconnoitered, the attackers are liable to the temptation of attempting to neutralize all of them. In this, however, economy and restraint are advisable. It is impossible to neutralize absolutely every target. Fire must be so organized as to destroy the main link in the defenses, and the rest will collapse in due course. Fire should be concentrated on the main direction of attack. It must be borne in mind that scattered fire is like striking with the open hand, instead of the closed fist.

In the case of the break-through of the German's rear defense line on the River Boromlya, the artillery fire was organized as follows. In the direction of the main line of the contemplated attack artillery support groups were formed—each, one to two regiments strong. They

Sovfoto

This new armored reconnaissance car is a cross between the German *Horch* 7-wheeled car and the Russian *Bronieford*. A local inhabitant points out to the Red Army reconnaissance sergeant the route taken by Germans as they fled.

ear Defenses

Prestit

The Russian heavy mortars, M-38, 120mm, supplement the fire power concentrated for a breakthrough, support infantry.

Sovfoto

This self-propelled gun (probably a 107mm or 122mm) is mounted on a T-34 chassis. It is firing from behind the hill crest (or reverse slope) and is protected by infantry who have dismounted and lie on the ground around it.

were assigned to the infantry and tank regiments which were to effect the break-through. Other groups were formed for counterbattery fire. In addition, every divisional commander taking part in the main attack had an artillery reserve of his own, which was disposed where counterattacks by enemy tanks were most likely.

While in the period when the enemy's fire system was being ascertained, main reliance was placed on the vigorous action of small bodies of infantry and tanks, but when it came to the actual break-through, artillery became the chief factor. The weight of artillery fire made it possible to smash the adversary's defense lines with the least loss of lives and the least expenditure of time.

Close and Continued Support

After the first line of defense was breached, half of all the battalion, regimental and antitank guns were rushed forward to the line reached by the tanks and infantry. The other half, together with the 120mm mortars, supported the infantry with fire from position.

The guards mortars, which had taken part in the artillery preparation, were then assigned to the divisions operating in the line of the main drive. When the next defense line was seized, all the artillery was rushed forward, and part of it placed on the flanks.

It should be remembered that the artillery had to force a river, mostly without regular ferrying matériel. Accordingly, even when the battalion guns were being transferred across the river, half of them at first remained in their former positions and maintained fire from there.

When breaking through a rear defense line, it would be futile to hope that all of the enemy's artillery can be silenced. This would require too much time and means. The important thing is to neutralize those batteries which the attacking forces are most likely to encounter when penetrating into the enemy's positions. The commander, therefore, must dispose his artillery accordingly.

In the case in point, the enemy's guns maintained heavy fire at the tanks and infantry, which had broken into his positions, but it was unable to prevent the widening of the breach. A Soviet regiment of destroyer guns moved forward to the edge of a wood and opened direct fire at the enemy's batteries. Subsequently, it moved forward close on the heels of the tanks and continued to take part in the advance. In particular, it facilitated the seizure of a large inhabited point.

Sovfoto

This new 45mm M-42 antitank gun is a longer version of older M-32 and M-37 with very powerful propellant charge. As a battalion weapon for direct infantry-cavalry support this gun replaced the 57mm M-41, which was too heavy to manhandle. The higher velocity of the new 45 makes it as effective as the 57, while it is light enough to manhandle. Such mobility is effective in a break-through.

Conclusion

What, then, are the main conditions for the successful and swift break-through of enemy rear lines? (1) *The first essential is timely (beginning at the distant approaches) reconnaissance to ascertain the nature and peculiarities of the enemy's defenses.* (2) It is of the highest importance to maintain vigorous action by both ground and air forces to prevent the enemy strengthening his rear defenses. (3) No less important is massed artillery fire at the moment of the break-through. (4) Lastly, the artillery must be decentralized in proper time to enable it to accompany the attacking forces on wheels.

The break-through can be consolidated effectively only if the artillery does not lag behind the infantry. Much depends on the initiative of the artillery officers. A mortar regiment commanded by Major Kuznetsov ran out of motor fuel. To await until supplies arrived would entail a loss of valuable time. Kuznetsov swiftly switched his regiment from mechanical to horse draught. Then, when fuel came up, the lorries caught up with the mortars and again took them in tow.

As in all operations, the chief factor of success in breaking through rear defense lines is the time element. To prevent a rear (or intermediate) line from being turned into a main defense line, the attacking forces must be supplied properly with transport, fuel and ammunition, so that during the action itself not a minute is wasted.

Correcting Artillery Fire from Tank*

by Senior Lieutenant G. Sidorov

A SOVIET heavy gun battery was ordered to cover the advance of a mobile detachment consisting of motorized infantry, cavalry, and tanks. The enemy's main forces lay on the farther slope of the hill, only the crest of which could be seen from the Soviet position. Consequently, it was not possible to correct the fire in the usual way from an ordinary observation post, as the enemy's forces beyond the crest were invisible, so it was decided that the observation post in this battle be arranged in one of the tanks.

The commander of the tank detachment placed a tank and its crew at the disposal of the gun battery. Before going into action, the battery commander acquainted himself with the tanks optical sights and learned to use them while on the move. He then made another careful map of the terrain. Fire would have to be corrected by wireless, so he arranged a meeting between the artillery wireless operator and the tank's operator. They carefully checked their sets and came to an agreement concerning wave lengths and call signals.

Before the battle began the gun battery took up its firing position, and the commander climbed into the tank and drove forward along with the advancing troops.

When the tanks reached the crest of the hill, the Germans opened heavy artillery fire. The whole battlefield was open to view as if it were in the palm of one's hand. A hostile millimeter battery was firing, so upon orders of the battery commander the tank commander stationed his machine at a spot suitable for observation. From there coördinates were taken of the German battery and the artillerymen were ordered to open fire. The battery wireless operator had no difficulty in understanding the command, and the guns opened fire instantaneously. Shells struck to one side of their target, so the gun crew was ordered to make a .75 turn, and this time shells hit their mark. The battery fired 36 rounds in quick succession. Nine enemy guns were destroyed, and the remainder ceased fire. Soviet infantry then dashed forward, and within a few minutes captued the enemy's positions.

In this battle, it was possible to maneuver the artillery fire far more quickly and effectively than when fire is corrected in the usual way from a stationary observation post.

*By cable to THE CAVALRY JOURNAL from War Department U.S.S.R., Moscow

Tank Assault in Swampy Terrain*

by Major P. Slesarev, Red Army

Soviet forces ordered to defend lines in the vicinity of an inhabited point found that the most advantageous area for tank maneuvers lay to the northwest, near a height. Because of swamplands discovered on both sides of the hill the main blow of the tank and infantry units was aimed straight at the height.

After three days of battle, the German lines were still not pierced. The Germans, expecting the frontal attack, had concentrated their main forces, including six "Ferdinands," in front of the hill and cut lanes on slopes toward the woods in order to facilitate their defensive operations. From the fire of the Ferdinands, it was clear that enemy resistance could not be broken by the frontal attacks.

Lt. Colonel Losik personally reconnoitered the German flank positions and discovered another passage through dried out swamps at the right of the village. The decision was made to launch the attack in this direction. After the minefields were rendered harmless, the tank regiment got underway at dawn on the fourth day of the battle. Then the tanks, accompanied by an infantry regiment, suddenly broke through the German lines, wiped out several companies of infantry and, after a rapid advance, approached the village from the northwest. Russian tankmen opened fire on the only road over which the enemy could retreat.

Realizing their perilous situation, the Germans hauled their reserves, consisting of seven Tiger tanks and an infantry battalion, into a counterattack. The Soviet tank crews destroyed two of the Tigers, and, by accurate fire, wiped out 150 Germans and forced the rest to flee for their lives. This bold move proved to be the turning point in the engagement. The enemy defense lines rapidly collapsed.

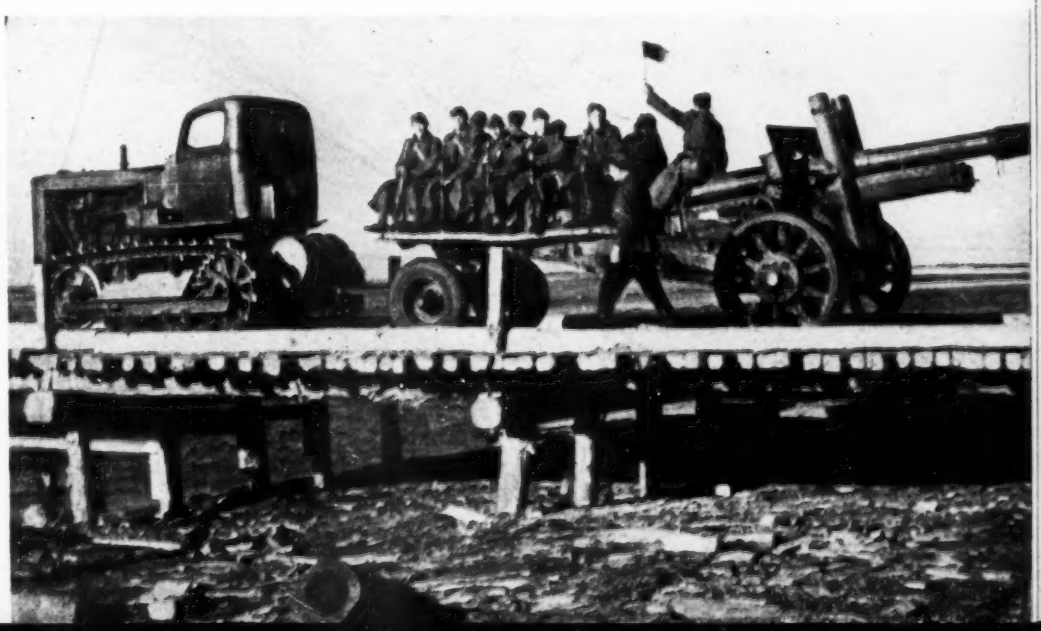
Under cover of night, the Germans fell back and moved across the bridge west of the village. Toward morning, the withdrawal became a panic-stricken retreat, with many Germans trying to swim across the stream in their flight. In close pursuit, the Soviet tanks raised havoc among the demoralized enemy troops.

It is interesting to note that Lt. Colonel Losik did not lose a single tank throughout the battle—largely because the tanks delivered such a crushing blow where the enemy least expected it.

Another example of woods and swamps being utilized for a surprise tank offensive occurred when the Germans transformed the area around the village of Lyanpo into a formidable center of resistance. Situated beyond a wide swampy stream, the village could be entered only by a country road about one kilometer south, but the road was heavily guarded on both sides by concentrated artillery, trench mortars and tanks. Realizing that a tank charge on the road was bound to fall through, the Soviet commander ordered that the weakest link in the enemy defense be found.

A detachment of Soviet sappers began to build a bridge near the road to attract the attention of the Germans, while other sappers laid a log road across the peat bogs and stream east of the village. When this passage was ready, a group of Soviet tanks shammed an attack along the country road, while the main body of the tank columns moved across the swamp route.

Sighting the Soviet machines on the highway, the Germans brought their artillery from other sections and left their flanks unprotected. The Soviet command expected this move on the part of the enemy, so when the Soviet artillery engaged the German batteries in a dual, the Russian tank regiment crossed the stream and smashed through the enemy's flank and rear positions. Inside half an hour, the Germans were routed; and the Soviet tanks, pursuing remnants of enemy units, advanced more than twenty kilometers that day.



Russian trestle bridge, similar to one built for tanks in swampy terrain, is much used and preferred to ponton equipment because of the heavy weights carried. This gun is a heavy 152-mm M-39 gun-howitzer.

Sovfoto

*By cable to The CAVALRY JOURNAL from War Department Press, U.S.S.R., Moscow.

Interaction of Aircraft a

ONE of the most complex aspects of the use of aircraft in battle is the organization of interaction with mobile groups of land forces. It is not surprising that commanders of all arms should sometimes criticize the operations of supporting aircraft on the grounds that they are "insufficiently clear." These same commanders have an incorrect attitude toward aviation and its potentialities. Their criticism springs from their own ideas and from failure to prepare thoroughly for coördinated action by all arms.

The organization of interaction is a complex business because, while the land forces are being sent into a break-through, the situation changes very rapidly, and extreme flexibility is needed in the leadership of air units. Tactics have to be arranged not in dispersal, but immediately over the field of battle.

The Test

If at the first stage of an air attack the aircraft act as a whole mass against previously studied targets, then at the second stage—in support of the infantry and tanks in the depth of the defense ring—the necessity arises for artillery interaction on new targets which are obstructing a further advance. How quickly can these targets be destroyed? The value of the work of the air force depends on the answer.

At the second stage of an air attack the planes must appear over the field of battle at the call of the commanders of all arms or of the tank commanders, and also on the initiative of the commander of the air unit. In order that the call of the land forces' commander can be answered, a certain time is necessary both to prepare and to fly to the area of operations. It is inevitable that after the land forces' commander has put through his request he must wait for air support.

In the battles at Orel an air unit ensured the break-through of the "N" tank unit and its subsequent operations deep in the enemy defenses. The battles lasted a fortnight. In this operation the Stormoviks did their job well, and were highly praised by the commander of the land forces. An analysis of their operations shows that they understood how to organize interaction with the land forces. It is worth while describing in some detail how this was achieved.

Combined Exercises Before Battle

Long before the operations began, the tanks and Stormoviks carried out combined exercises. The commands of both units collaborated in studying problems of administration, identification and methods of summoning the planes to the required spot. Special attention was given to target-spotting. By means of radio, rocket and tracer, the tank crews signaled to the planes the objects hindering advance. The Stormoviks, on their part, undertook to lead the tanks to their targets.

The joint work of "land" and "air" was firmly founded on radio communication between the staffs and between tanks and planes on the field of battle. This contact, well established during the exercises, made it possible to guide the planes during flight—a fact which later proved of great, even decisive, importance.

A reliable system of tank recognition was evolved. At one time, recognition depended on the inscriptions and other markings on the body of the tank. During exercises it became quite clear that this method was inadequate. In battle, the markings become soiled, and the explosion of shells and dust often makes it impossible for pilots to see the marking at all from a height. For this reason reliance had to be placed mainly on radio and light signals.

At first the tank crews could not get used to the speed with which the planes operated. The peculiarities of the plane and the conditions under which the pilots worked had to be made clear to them. Some tank commanders at first had a tendency to call up the Stormoviks themselves—a proceeding which would inevitably have disorganized matters. It was arranged that all calls should go only through the command point. After this, the Stormoviks struck where they were most needed.

Inter-Communication

Before the battle, an air operational group was attached to the tank unit. Its special function was to see that both arms worked together without a hitch. It was headed by an experienced commander, Colonel Semyonov. He had at his disposal an operational worker, an assistant to the chief of communications, and a highly experienced radio operator. This composition proved entirely satisfactory.

The commander of the tank unit and his chief of staff set aside two radio stations for the use of the air representative. One of these stations connected the operational group with the air staff headquarters, which was a long distance away. It was also used for calling up the Stormoviks and fighters.

Through the other radio station, contact was maintained with the planes. Through it the pilots were given their bearings and cross-bearings as well as full information on the air situation around the targets. Air representatives were constantly present at the command point of the tank unit and at observation posts.

Tasks of the Stormoviks

In the first phase of the battle, the enemy's first line of defense in the direction of the main blow was subjected to attack by the whole mass of planes. When the tanks had entered the breach, the Stormoviks switched over to ensuring their work.

The planes were called to the battlefield for pre-

ad Tanks *by Colonel M. Kotelnikov, Red Army*

liminary softening of centers of resistance, and for extinguishing enemy firing points impeding the advance of the tanks.

Although the aerodromes were a considerable distance from the battlefield, the tankmen's requests were quickly met. Two or three groups of Stormoviks were always held ready for flight. It was impossible to rebase the Stormoviks nearer the front line, as there were no suitable landing fields in the battle area.

The effectiveness of the organization was amply proved in battle. On many occasions, planes had to be redirected while in the air. Often after the pilots were given a task and sent off in flight, the situation would change. If the tanks reached the target ahead of the Stormoviks, the planes had at once to be redirected and given a new task. This happened dozens of times, and in every case the redirection was successful. Not a single bomb or shell from the Stormoviks fell among the Soviet forces.

Coördination

At one stage, a great tank battle developed. The maximum number of planes had to be sent to the area. After the targets had been softened from the air, the Soviet tanks inflicted great losses on the enemy and occupied a heavily fortified resistance point, which the Germans had intended to hold. On nearly every occasion the actions of the air units produced a change in the situation, and at certain critical moments the Stormoviks opened a road for the tanks and led them to the attack. The scrupulous training in target indication gave excellent returns. As soon as the Stormoviks appeared over the battlefield, they were given signals from the ground by rockets, and by shots fired at the target from several directions by the tanks. This helped the pilots to find their targets quickly. The radio, as always, was an indispensable means of communication. Commands were given by radio not only from the observation post, but also by tank commanders actually on the battlefield.

Besides working directly on the battlefield, the Stormoviks hurled forestalling blows at the enemy reserves. For this purpose a constant reconnaissance was maintained in the interests of the tank unit. The Stormoviks were in a better position than the army and front intelligence to examine the enemy rear for the tanks in the direction of the drive.

On one occasion an enemy group of 100 machines was discovered pulling itself together. The Stormoviks struck from the air, and the tank commander strengthened his "fist" in good time. The enemy was unable to regain the initiative.

On another occasion, Stormoviks on reconnaissance noticed German troops withdrawing. The tank commander lost no time in making use of the favorable situation. He increased his pressure and prevented the Germans from consolidating on the next line of defense.

Throughout the operations, the flying personnel listened constantly to the voice of "the ground," and carried out its command to the letter.

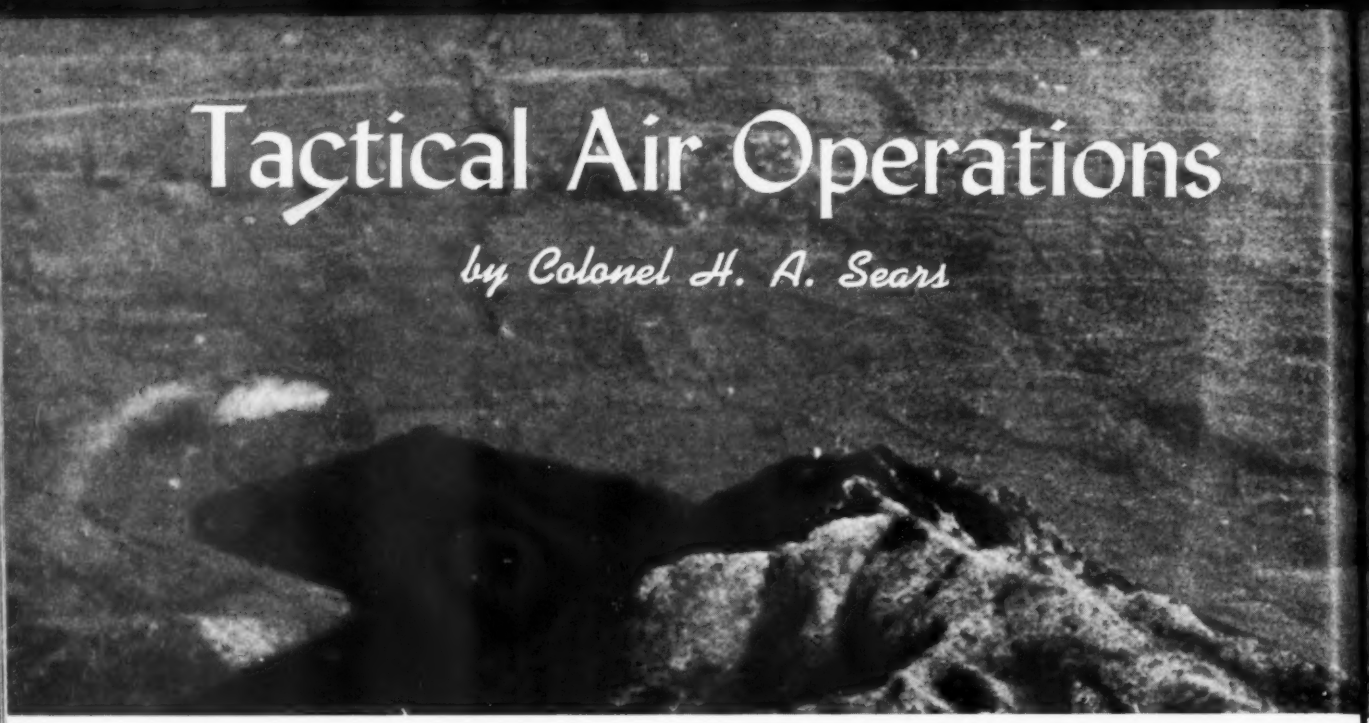
Certainly, it would have been ideal to have had interaction in conditions of uninterrupted air attack on ground targets. But for this, a huge number of planes would have been needed, and even then it would not always have been worth while. The experience of the latest battles shows that even comparatively small forces can get results when they are used with skill.

Soviet attack planes are shown here annihilating a German tank column. Note smoke from tanks given direct hits.

Sovfoto

Tactical Air Operations

by Colonel H. A. Sears



AIR POWER has added a third dimension to the classic pattern of warfare as it has previously been known for centuries. Man's mastery of the air has added, therefore, also a third medium in which soldiers operate. Just as there are armored units on land, and battleships on the sea, so now there are fortresses in the air. And as with all other means operated on the two media of land and water, so these aerial ships in their medium have different characteristics and hence different capabilities and varying abilities.

The Navy has its giant battleships, smaller cruisers, more lightly gunned destroyers, and its lesser auxiliaries, so also does the Army Air Forces have its bombers, fighter-bombers, fighters and other lesser planes. Just as the various types of naval craft differ in appearance and employment, so also do the planes of the air force differ in silhouette and suitability of mission.

Organization of Army Air Force

As a result of the many types of planes that have been developed, it has become necessary for the Air Force to organize along functional lines; consequently, theater air forces are now divided into strategic and tactical air forces.

Let us look momentarily at the difference between these two air forces, both of which may be found operating in any theater of the war.

The strategic air force is specifically organized, equipped and trained to operate against vital targets beyond the ground combat zone. It is characterized by relatively fixed bases, limited mobility, and the ability to carry heavy loads of destructive agents for great distances.

The tactical air force is specifically organized, equipped and trained for joint operations with ground and/or naval forces, against the enemy armed forces within or moving into a ground combat zone. It is characterized by mobility, a high degree of ground control of aircraft, and the ability to coördinate its operations closely with those of ground and/or naval forces. It is further characterized by capabilities for air defense and the responsibility for such defense, in the battle area.

The Tactical Air Force

Tactical air operations may be defined broadly as the employment of air power in the surface battle. These operations are divided into three phases which may occur consecutively or concurrently. In order of normal priority, they are:

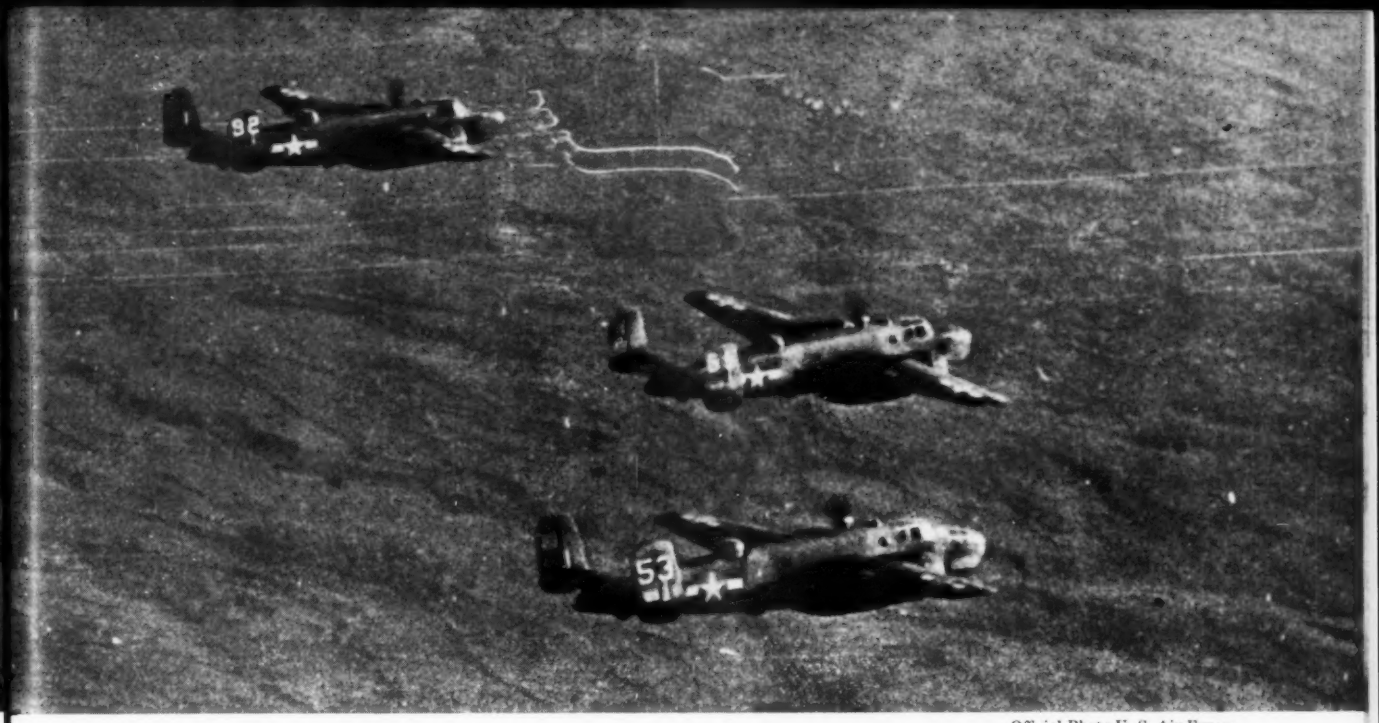
Phase I—Destruction of the enemy air force in the air and on the ground, in order to gain and maintain air superiority.

Phase II—Operations against enemy rear area objectives, including the disruption of communication lines, and the destruction of reserves and supplies, in order to isolate the battlefield.

Phase III—Attack on and destruction of enemy ground forces and other objectives, the destruction of which will immediately affect the progress of battle, in order to accomplish as a part of the air-ground team, the destruction of the enemy armed forces.

Originally, tactical aviation was confined within the narrow bounds of what was called "air support." Now the converse is true and *air support* is regarded only as one phase of tactical aviation. Tactical aviation, therefore, has been given a new and broader meaning. It can be described as that form of military aviation which is designed to win the battle of the air, prevent the movement of the enemy troops and supplies, and participate with the surface forces on the battlefield.

During the air support era, much ado about command was often heard. Many ground commanders to whom air support units were attached, assigned mis-



Official Photo U. S. Air Forces

B-25 medium bombers fly in formation over mountainous country on way to bomb enemy gun positions near Cassino. Tactical Air operations in southern Italy entailed use of practically every type combat aircraft.

sions and attempted to control air operations to the detriment of both. This question has been definitely settled—"The command of air and ground forces in a theater of operations will be vested in the superior commander charged with the actual conduct of operations in the theater, who will exercise command of air forces *through* the air force commander, and of the ground forces *through* the ground force commander."

Too many of us have been brought up to believe that all that we have to do to receive air support is to whistle for it and let the old biblical quotation govern—"Ask and ye shall receive." Such is not the case— "Them days is gone forever."

A tactical air force is usually built around a tactical air division. The former is a tactical, non-administrative unit, its headquarters being co-equal to that of a group of armies. The latter, the tactical air division, is both a tactical and administrative unit, divided into a forward and rear echelon with duties comparable to those of larger ground units. The flying units of these tactical air divisions are composed of fighter aviation. tactical bombardment aviation, and photo reconnaissance aviation. In addition to normal service units, there are found control, communications and aircraft warning units, photo tech squadrons, antiaircraft artillery, light and heavy wire construction units, and radio intelligence units.

Mission and Operations of Tactical Aviation

The *Mission* of the tactical air force is to defeat or destroy by air action enemy air, land, and naval power within or moving into a theater of operations. This mission is carried out in three consecutive or concurrent phases, based on priorities:

I. Counter air force operations for the purpose of achieving air superiority.

II. Attack on the enemy rear area objectives for the purpose of isolating the battlefield.

III. Participation in joint air-ground operations to destroy the enemy military forces on the battlefield.

Official Photo U. S. Air Forces

A photographic reconnaissance pilot made this picture of a trainload of German tanks east of the town of Macerata, Italy, near the Adriatic coast. The tanks are Mark III's mounted with assault guns and were being hauled to reinforce the units facing the Eighth Army. The later bombing of these tanks assisted directly in isolating the battle area. A main target in Italy was the enemy-held transport system, vital for supplies.

Although the ground force's requests fall in priority III, this should not cause the ground elements to be downhearted, for the accomplishment of the first two objectives are bound to contribute materially to the success of the entire effort, as well as to that of the specific ground effort; whereas the successful accomplishment of a priority III mission alone would lead only to local success.

That does not mean that the ground force will never get air support. It does mean that *except when the honoring of the ground commander's air request will contribute to the success of the entire battle as differentiated from a local success, planes will not be diverted for it UNLESS:*

(a) Air superiority has been achieved and can continue to be maintained by our own air forces and that

(b) The battlefield has been isolated from re-supply and the introduction of reinforcements by the enemy.

If the ground commander's air request is honored, he should get ready to "saddle up old paint" and get going. He has made the first team, and when the smoke of battle clears, he will be news at home—"home town boy makes good."

The Phase III Mission

If the above two conditions exist, then due consideration can be given to the Phase III Mission, which is designed literally to drop bombs right in front of the ground troops, in accordance with previously laid plans, and on the request of the ground commander.

It is a difficult phase to accomplish since: (1) targets are small, well dispersed and hard to locate; (2) bomb lines must be established to avoid bombing our own troops; and, (3) to be effective, *immediate* response must be given to the approved requests of ground commanders. Maximum effectiveness is generally achieved when not more than one hour elapses between the time a bombing mission is requested and the time that the planes arrive over the designated target.

This phase depends for success upon team work and coöperation, and no plan has yet been devised for its complete and satisfactory application. It is almost impossible to employ this phase in a fluid situation where bomb lines cannot be maintained. It is best employed on a stable front where pre-planned bombing attacks can soften up the enemy for a break-through by the ground forces.

To achieve the necessary teamwork and coöperation, air parties are sent down to corps and divisions, to keep ground commanders informed of the nature of the air effort, to exchange intelligence, to advise the ground commanders on the capabilities of aircraft, and to relay requests for bombing and reconnaissance missions. When it is desired to make a request for air support, communication with the air parties is obtained over normal command channels.

The Ground Commander

If, as a unit commander, you make a request for an air mission, the first question that will be asked at your division headquarters will be *"If granted,* will this mission further the joint air-ground plan of the theater or task force commander?" (Hence you should ask that question of yourself prior to making the request.) If the answer to this question is, "yes," send in the request. If the answer is that it *might,* you should also send in the request. Bear in mind that you do not know at what priority point the I and II missions may be in the process of performance, or of successful comple-

Official Photo U. S. Air Forces

Above photo, taken by Colonel Peter C. Haines May 10, 1943, shows German planes destroyed on ground at Tunis by Tactical Air Force during the phase of neutralizing enemy air power prior to final drive on Tunis.

This giant Nazi Mark VI tank, complete with 88mm gun, was knocked out on the road to Tunis by the Tactical Air Force. On one single day—May 6, 1944—of the 2,146 sorties made, the great majority were bomber, fighter-bomber or strafing missions on a 6,000-yard front before the main effort of the ground forces.

tion at that time. Neither will you know what the prognosis is for those I and II missions that may be on the books, and will have to continue, even though your mission is granted.

When your request reaches the superior headquarters, the question of "furthering the air-ground mission" will again be asked, and if the answer is again "yes," the air commander must approve the selection of target, while, at the same time, the ground force commander establishes the bomb line, and makes adequate arrangements to provide appropriate air headquarters with accurate information as to changes therein.

The Air Commander

What sources of information are there that will assist the air commander in determining the adequacy of the target? There are five apparent at a glance:

1. Information from ground force reconnaissance agencies, transmitted through ground force channels.
2. Information from air parties stationed at ground force headquarters—(check and double check).
3. Photography and visual observation by reconnaissance aviation.
4. Information available from returning fighter and bombardment missions.
5. Maps, charts, and mosaics previously accomplished by reconnaissance aviation.

Suitable Targets

What specifically constitutes suitable targets? Suitable targets will vary in every case depending on terrain, enemy strength, lines of communication and other similar factors. One general rule holds: the more concentrated the target, the easier it is to attack effectively. The converse holds true also, for a concentrated target can be more easily defended by lesser anti-aircraft means (if available) than the same target, dispersed.

Targets that can be brought under effective artillery fire are not considered profitable targets for air attack. Since enemy dispersion will be greatest at the front, it follows that the majority of concentrated targets will be found in the rear of the enemy battle area. The following four types of hostile installations might then be taken as representative:

1. Concentrations of troops and vehicles, which can be surprised, and would have difficulty in dispersing.
2. Accurately located command posts and signal centers.
3. Gasoline, ammunition, and ration depots.
4. Exposed or vulnerable artillery positions.

In general, targets which can be damaged or destroyed by a near miss are desirable. It is interesting to note the proportion of near misses to the actual hits made in air demonstrations—and these without any counter measures of flak or fighters for the aircraft crews to contend with.

What factors now govern in selecting a target, if a multiplicity of requests for Phase III missions is received, and they all fulfil the conditions of suitability? These appear to be four.

1. Will the destruction or neutralization of the target selected further the accomplishment of the air-ground mission?
2. Can adequate ground fire be directed on the target to achieve destruction or neutralization?
3. Can the target be located *without search* by attacking aircraft combat crews?
4. Is the target vulnerable to the type of aircraft that can be made available on the mission?

Briefly is the target *findable, hitable, valuable* and *vulnerable?*

Official Photo U. S. Air Forces

Death comes tumbling from the clouds on German gunners struggling to prevent Allied troops from crossing the Volturno River in Italy. Bombs from a B-25 Mitchell of the Northwest African Air Force head for enemy gun positions. The winding Volturno River can be seen below.

The Bomb Line

In the meantime, while the matter of suitability and the factors of selection are being weighed by the air commander, the ground commander is probably having his troubles selecting a bomb line. He must not only designate this line, but he must assume its maintenance and make adequate provision for its unmistakable identification.

For a successful understanding of the bomb line by both ground and air forces, identical gridded photographs would be the ideal and preferred means. These, however, will frequently not be available. It therefore becomes the duty of the ground commander who has designated the bomb line to provide accurate and timely information as to any changes made therein, and to transmit these changes through the available air party —always including such room to preserve his freedom of maneuver as he may desire ("Kentucky windage," probably, to the less trusting souls).

The obligations of the ground commander having been fulfilled in the matter, the tactical air commander then interprets the bomb line for his aircrews by describing it in terms of terrain features recognizable from the air. In doing this, however, he makes an allowance for a margin of error in the bombing (*true* Kentucky windage, no doubt).

Various aids for the identification of the bomb line may be employed such as:

1. Colored smoke.
2. Smoke barrage from mortars or artillery.
3. Panels.
4. Radio ground to air communication, where a skilled and experienced observer may "talk" the pilot or formation leader into the target.

While discussing the bomb line, an apt question naturally arises: "What does the reconnaissance out in front do?" And the answer is that forward reconnaissance *which groups itself* has been, and can expect to be bombed. The key to this situation lies in dispersion. It has already been stated that, in general, the more concentrated the target, the better type it is. If the air is told not to bomb three or less vehicles, and the forward reconnaissance elements keep the dispersion they have been taught, then there will be no unnecessary casualties as a result of either erroneous friendly bombings, or the erratic ministrations of an enemy.

Call Missions

In any operation, circumstances may arise which provide little or no opportunity for pre-planning, and missions against unforeseen but suitable objectives may be assigned to bombardment units. Such targets must be attacked quickly, and their destruction, if achieved, must have an *immediate* affect upon the progress of the battle. These targets may be located:

1. As a result of air reconnaissance information secured through tactical air reconnaissance, or from the interviewing of returning combat aircraft crews.
2. By call from Ground Headquarters, when the necessity for the application of air power is immediate.

In order that such missions may be honored, some fighter-bombers or bombardment aircraft, with their crews briefed and bombs loaded, must be kept continuously on ground alert. The disadvantages of this type of operations are obvious:

1. Limited briefing and navigational planning on *specific* targets.
2. Continual *rotation* of combat crews on alert status.
3. Limited *suitability* of bomb loads for *all* types of targets.
4. Inability to effect reasonably large concentrations of aircraft, which necessitates *piece-meal* attacks instead of massed action.

These disadvantages do not preclude call missions against unforeseen objectives in special type operations, such as amphibious landings where call missions will facilitate dealing with unexpected enemy opposition during a critical period; or in a situation where the battle front has become so fluid that friendly and hostile forces are intermingled to such an extent that it is impossible to carry out tactical bombardment missions in the immediate area of the front; and when action beyond the battlefield will hinder or preclude the forward displacement of hostile artillery to assist the

At a South Pacific base behind the enemy lines, cringing Japs huddle in dugouts alongside dual-purpose 75mm antiaircraft guns as a strafing North American B-25 flies a few feet overhead on a tactical mission.

Official Photo U. S. Air Forces

Rail transportation, essential for moving troops and supplies, is the target of AAF B-26 Marauders as they harass enemy-held railroads in Italy. Picture is the bombing of a railroad bridge one mile north of Civita Castellana, over which Nazi forces defending Rome were moving matériel and men into the Rome area. Marauders, scoring direct hits on the bridge, created an additional bottleneck in the enemy supply lines—a part of "Operation Strangle."

enemy in bringing reserves into the immediate battle area.

Conclusion

An effort has been made here to give a brief picture of the air force of today, its two combat subdivisions—strategical and tactical—and the broad principles of operation of the tactical air force, with which ground forces will be most intimately concerned.

As to command, it must be remembered that it has always been considered a lifelong study to learn *how to command ground or ocean forces successfully on their two-dimensional media.* Why, therefore, should it not be conceded that on entering a three-dimensional zone of combat operations, command of forces operating in that third medium should be exercised by personnel schooled therein and familiar with the problems thereof?

As can be seen, the business of "air support" has branched out considerably from the ground commander's erstwhile concept, and there are very good reasons why the ground force, as a small group, cannot merely whistle and have the goods delivered C.O.D. It can be seen further that instead of being based on the rather infantile "gimme" principle, the honoring of air requests has been placed on the broader concept of mutual benefit, more aptly expressed in the coöperative proven principle of the Three Musketeers, "One for all, and all for one."

It must be remembered that "air support," as it was formerly known, is now non-existent in its previous form—where it was expected to achieve the miraculous by myriad, wasteful, piecemeal attacks. Instead, air support is today available, neatly packaged, under the registered trademark of "tactical aviation," ready to be delivered f.o.b. to those points where it will do the most people the most good and contribute to the success of the entire battle rather than to a local success.

Experience has definitely and clearly established a close and permanent understanding between the soldier and the airman. The old distrust and indifference has disappeared, and in its place has come the closest possible integration of effort. No doubt, there is room for improvement in detail – there is bound to be – but broadly speaking, coöperation, both strategical and tactical, has been brought to near perfection. Soldiers and airmen work side by side laying their plans. In the field the commanders live together. Before battle, the soldier indicates the strong points that he expects to give him trouble, and the airman directs his squadrons against them.

If you are an infantryman, artilleryman, or a tanker, discuss with the airman his problems. If you are an airman, find out how little you actually know of ground problems. The doughboy and the airman, the artilleryman and the tanker, are all Americans, their uniforms differing only in the insignia that they wear.

"Operation Strangle" in Italy

THE Tactical Air Force bore the brunt of the "Operation Strangle" in Italy designed to draw a noose around the Italian rail system. . . . Target of the operation was the entire enemy-held transport system through middle Italy—coastal shipping, rail and road.

By March 24 no through rail line led to Rome. The closest approach without transshipping was to within 125 miles of the city.

With the disruption of his rail lines, the enemy was forced to rely heavily upon transportation of men and supplies by motor vehicles and by vessel. Only a fraction of the tonnage needed to keep the German armies going—estimated at 3,000 tons daily—could be moved by water. Highway transportation thus became the enemy's mainstay. But night and day attacks on road traffic also bore fruit, with an average of about 40 enemy vehicles destroyed during each 24-hour period.

The increased dependence upon motor transport soon began to have the expected effect on Germany's fuel supplies, never too abundant. Most trucks in use were of Italian origin, and spare parts were hard to get because the factories at Turin and Milan had been destroyed by aerial attacks of the Strategic Air Force.

"Operation Strangle" picks its targets at points that place two extra burdens on the German—the breaks are made as far as possible from large cities at which he has repair depots, and are made at points that stretch his trucks to the utmost in transshipping.

On May 1 the German could still get through more than his daily needs of supplies on the Cassino and Anzio fronts. But his requirements were geared down for the lull in battle. As the time grew nearer for the battle that would burn up his reserves, air operation was intensified to keep those reserves from building up.

British Pa
Aid A
On Three Fr

A mountain battery of Indian troops march through the Shan hills of Burma.

British Official Photo

IN the wooded heights on the Allied side of Cassino mule transport has been found necessary in this mechanized war. From a distribution point christened Clapham Junction, Italy, a train of pack mules and jeeps with trailers departs every night for forward areas. The perilous route passes through "Inferno Valley" and "Mad Mile," and ends at "The Bowl," from which supplies are carried to their final destination on human backs. The Mad Mile is under unceasing enemy observation and constant shelling. Considering the risks, losses among mules have been surprisingly slight.

The present plan of operation enables all Cassino troops to receive daily rations, ammunition, mail, newspapers and comforts. The nightly group of officers accompanying the transport train may include the director of medical supplies, the Provost Marshal, whose police guide traffic, the director of transport from the Royal Army Service Corps, which unravels traffic blocks, or a chaplain thumbing a lift to be with his men.

Likewise through the jungles and mountains of Burma, the indefatigable army mule packs machine guns, radio units and supplies to British troops.

Pack mules played a big part in the Canadian advance through Sicily, particularly in some of the mountain regions which defied even the best motorized equipment. Here, a mule pack convoy of the Royal 22d Regiment is shown passing through Leonforte high up in the mountains, August, 1943.

Canadian Official Photo

Pack Mules Army Fronts

Troops of the famed Burma Rifles, operating among the rugged mountains of the Shan Country of Burma, use mules to carry their machine guns, radio units, other equipment.

British Official Photos

A mule pack train, one of many which were used for transporting supplies in mountainous country of Sicily, is seen threading its way through the bomb-damaged streets of Adrano.

An Indian mule team is shown nearing the River Trigno in Italy, where extensive use was made of available mules for pack transport.

Mechanized Cavalry On Reco

RECONNAISSANCE is the process of gathering information of the enemy and the terrain.

The movements of cavalry on reconnaissance will be directed toward obtaining the required information and will not be regulated by the movements of the force from which it is sent out. On protective duties the reverse is the case. Hence, the two duties of special reconnaissance and of protection should never be allotted to the same cavalry unit.

Report in Time

A force is sent on reconnaissance because the commander requires information and he requires it as quickly as he can get it; it cannot come too fast. However good the plans and their execution for getting the information may be, *unless it is sent back in time it is worthless.*

It takes time to collect information because it is obtained by small patrols, each contributing its little quota to the whole picture. This information has to be sent back through the various echelons, and if there is delay in transmission, or no transmission, there is a consequent blank space in this picture. Hence, it is the duty of cavalry personnel of *all grades,* from the lowest to the highest, *to send back at once information obtained.* Too much time cannot be spent in hammering this fundamental principle home. Every cavalry exercise must be made the occasion for practice by all ranks in this matter.

It would, of course, be wrong for the commander of, say, a cavalry motor squadron to withhold information from his brigade commander until he had fully completed the information picture he was sent out to acquire. He must act to the brigade commander in this respect as he expects his troop commanders to act to him. The small scrap of information obtained by the scout of a patrol may prove to be the most important item that the brigade commander has been seeking. It must be remembered, too, that the value of information diminishes with its age.

Dispersion a Necessary Evil

Reconnaissance by its very nature requires dispersion in the force making it. It is a necessary evil and should be reduced to the absolute necessary minimum required. Dispersion causes loss of control or at best makes control difficult. Loss or reduction of control reduces maneuverability and adds to the time required to get information back and orders forward. Consequently, in planning his reconnaissance, the squadron commander should first look at his task as a whole, then consider how he can break it up into phases. Each phase should gradually work and lead coherently and logically to the final accomplishment of his mission. Having done so, he will break up the first phase into troop tasks, consisting of as many troops as he considers necessary.

Division of Task Among Troops

Where our cavalry commanders sometimes err is in giving too large tasks to the troop. This makes the troop commander's task very difficult and leads to a repetition of the error in the troop and a consequent increase of time required to complete the allotted task. In fixing the troop tasks, the squadron commander should ask himself:

(1) Is the terrain such that it can be searched very easily; *e.g.,* can a good view be obtained from dominating features over open ground? If so, he can allot a larger area to a troop than he would give to another troop whose area lacked dominating features, was more populous and close.

(2) How many patrols will the troop commander have to use to search the area, and how long will it take to complete?

(3) Bearing in mind his mission and his knowledge of the situation as a whole, as disclosed to him by his brigade commander, how much time can he afford to spend on this phase? The length of time he will spend, will be that of the troop with the most difficult task.

(4) Is his knowledge of the situation such that he can with safety make only a cursory examination of the terrain in this phase and thus save time? This may happen in the very early stages of the reconnaissance when the commander *knows* that the enemy is yet at a distance but for his own security and satisfaction nevertheless decides to reconnoiter.

Squadron Orders

He will then issue his orders giving any information of the enemy and his own forces that he has not already communicated to his troop commanders; give the squadron's task; fix the areas clearly to be reconnoitered by the troop or troops used; fix the successive bounds; determine the squadron rallying point on completion of the phase; describe by questions the tasks of each reconnoitering troop, the time he expects each troop to complete each bound, where casualties will be sent (wounded should be sent to V.A.D. posts in the locality), where reports will be sent and/or the squadron axis of signal communication, the time at which the present C.P. will close, and the next one open.

Troop Orders

The troop commander has to approach the execution of his task in much the same way as the squadron commander has done. He considers his mission, the terrain,

★Courtesy *An Cosantóir* (Eire).

and the force at his disposal. His study of the terrain and road will show him how to divide up the task between the patrols that he has decided are required. He will issue his orders; give information of the enemy and his own troops; give the troop task; fix the successive troop bounds to the first squadron bound; and fix where the troop will rally; set the tasks for each patrol by means of clear questions to which they must supply clear answers; provide the patrols with any necessary D.R.'s; indicate how casualties will be treated; where reports will be sent; the location and movement of the squadron C.P. to provide against the troop commander becoming a casualty.

The Job of the Patrol Leader

The patrol leader will consider how he will tackle his task. He will, for example, have been asked by the troop commander to answer the questions: "Are there any enemy on Hill X?" "Is the road clear as far as 'Y'?" It will not do for him to rush his patrol at full speed towards those points, as so many of our cavalry units do. He will have to consider the terrain towards the first objective, use his map and, if lucky enough to be located at or near commanding ground that gives a view towards the objective, use his glasses to study the terrain.

The purpose of this study is to assist him to determine what terrain features he can use to assist his approach towards his objective. For example, he sees that about 800 yards along the road that he will travel, and just to the right of it, there is a hill from which he will probably be able to get a good view of the terrain towards Hill X. He decides that he will move his patrol to this feature first. He has another reason for going to this hill. Because it commands the road, it is possible that there may be some enemy on it who would be quite willing to lie doggo and let his patrol pass through in the hope of trapping bigger game; or, having let him through, prevent any of his D.R.'s or messengers from getting back with information. A further reason is that if he succeeds in getting to the hill he can use it to cover the next move of his patrol. Hence this study—to plan his moves or bounds toward Hill X. He should not fall into the all too common error of splitting up the patrol into a number of smaller ones. By doing so, he would lose control, put an unbearable strain on his means of communication, risk having each one snapped up by small enemy parties or having any one or more of them stopped by one or two men. Meanwhile, he would have robbed himself of the means of backing up any of them.

His next problem is the formation in which he will move his patrol. He must provide scouts in front, men to watch the terrain on each side of the road, and on his rear. He must decide, if he has L.A.'s or M.G.'s, where he will place them in the formation, detail connecting files, decide who will go back with information if his force is ambushed and, finally, where he himself will travel.

Then and only then is he ready to issue his orders. He assembles his men, gives them all the information he has, tells them the patrol task and how it will be executed, lets them know where the troop commander can be found and the squadron C.P. and, if wounded, where to go for treatment, where he will be himself, and who will command the patrol if he becomes a casualty.

First Contact

Should the patrol encounter the enemy, the scouts will be backed up, supported by the fire of the L.A.'s and/or M.G.'s, and every effort will be directed to acquiring as much information of the enemy as possible. Should the enemy force be established as a small one and good meat for the patrol, it should promptly be attacked and dispatched or captured. Prisoners thus captured will frequently prove a most valuable source of information. Should the force prove too strong to be attacked successfully, the patrol leader should leave part of his patrol in position to observe the enemy, while with the remainder, he endeavors to get into positions from which as much information as possible can be obtained. In this he uses his L.A.'s and/or M.G.'s to cover the movements of his men.

As soon as contact is established with the enemy, the patrol leader should send back this information to his troop commander, and state precisely where contact is made and when, what is then known of the enemy, what the enemy is doing, and what action the patrol leader is taking.

Location of Commanders

It is obvious that cavalry commanders of all grades must keep well forward with their units. They are, first of all, leaders and not merely post offices. They must be forward to take the quick decisions which are an essential of cavalry tactics, to keep themselves posted on the situation and to save on communications.

This nevertheless presents a problem to the squadron and troop commanders. If the squadron commander sets up his C.P. well forward with one troop, it may be a poor location for serving another troop. How can he solve this problem? The ideal to aim at is to have it as far forward as possible and keep moving it to maintain this, while at the same time, he retains control over his squadron as a whole. He must be careful not to move voluntarily off the axis of signal communication given to him by his brigade commander without making sure *before* doing so that the latter is aware of this and the new axis. Should he be forced off it by enemy action, he must at once inform the brigade commander. The reason for this is obvious; if radio communication breaks down the brigade commander has no means of finding the squadron commander unless he is on a mutually known axis.

To go back to this squadron commander's problem: in most cases it will be found that the solution lies in placing and moving the C.P. to keep as much control over the squadron as a whole and to keep in touch with the troops by personal visits to them. The squadron staff can be used to assist in this, but except in the most unusual circumstances, the squadron commander and his second in command should not be absent from the C.P. simultaneously. Long absences of the commander or staff officers are not to be encouraged. These principles apply to the troop commander also.

Use of Reserves and Armored Troops

How is the squadron commander to use his reserve in reconnaissance if he has one? In the case of a motor squadron commander he should keep the armored troop in reserve. Whether or not he is also able to have a motor troop in reserve depends on his judgment of the situation. The armored troop is very vulnerable to mines and direct artillery fire, if it is not preceded by a motor troop. It should, therefore, be held in reserve to be used to back up and support by its fire the motor troop or troops requiring support. It should seldom be broken up into single car detachments. It should not engage in action as a number of static pill boxes. It has mobility, and it should use it. Its best mobility is on roads, and as much use as possible should be made of this. Frequently, it can get into practicable terrain off the road and where this is possible, use of cover and its mobility will increase its effect. One of the most common sights is to see the whole troop lined up and stopped behind the leading car on a road with only the first two able to take part in the action.

Sometimes the armored troop will have to act without motor troop cover, as when, for example, the motor troop in dismounted action, assisted by armored troops, has broken through the enemy, and the latter is rushed through to get in rear of the enemy. This should be a temporary phase; the motor troop or reserve troop should again be put in front as soon as possible. On other occasions there may be no alternative to using the armored troop alone as, for example, when all motor troops are otherwise employed and an enemy attack is developing on a flank, or when a suitable target for armored cars presents itself, such as troops on trucks. Then, by all means, use it, but let it be used vigorously and intelligently—making full use of its mobility and fire power.

There is no point in using armored cars statically in the open against artillery firing direct; the gun will always win in these circumstances. On the other hand, there are few roads in Ireland which have not a bend every two or three hundred yards and a fast moving car on such a road is not a sitting bird for artillery, nor is a car which moves up to a bend to engage its target and then quickly moves back around the bend. Artillery, firing indirect on to a road, has little chance of hitting a moving vehicle.

If the commander has a troop (cycle or motor) in reserve and has learned that the other troops are in contact with the enemy, he then must make a quick decision as to how he will employ it, if it is necessary to do so. It may be that he has to clear up the situation on one or other flank of the located enemy, and he should use the troop to do so. It may be that one troop has found a hole through the enemy screen. The troops in contact should be left in contact to observe and report on the enemy. The reserve should be pushed through the hole supported by the nearest troops in contact and, leap-frogging through that part of the troop which has succeeded in getting through, proceed to get the required information. Should only part of the reconnoitering troops be deployed in contact with the enemy, as much of the unengaged parts as possible should be ordered to follow through the gap and leave behind those deployed in contact with the enemy.

If the squadron commander knows that he will have to return through the gap, he will have to leave behind a sufficient force to hold it open for him. If at all possible, he should return by a different route after getting the information he needs. He may also need to hold the gap open in order to get his information back to the brigade commander. If so, he should arrange to have a relay to and from the troops at the gap so as to conserve his D.R.'s Again it may be possible to get around a flank and behind the enemy's screen. The reserve is the force which can do this quickest.

Conclusion

It is well to remind oneself here of five things:

(1) The object of reconnaissance is to gain information and to convey that information to the proper quarter in time to be of value.

(2) The success of a reconnoitering force of whatever size depends principally on the leader and on the clarity of the orders he is given.

(3) When touch with the enemy is once gained, it should never be lost unless so ordered by higher authority.

(4) However accurate the information obtained by any unit may be, it will be of little value unless it arrives in time to be acted upon.

(5) It is a principle of cavalry leadership that the commander must not wait for chances to come to him. He must always be on the lookout to make them for himself.

The squadron or troop commander may feel overwhelmed by the amount of detail that he must know about reconnaissance and, in fact, about the other missions which he may be given. He will be overwhelmed if he does not make them second nature to him by constant practice. There is no teacher like experience. The more you know about the technique of your job, the more time you will be able to devote to thinking how to outwit the enemy.

Reconnaissance Aids for Range Determination

by 1st Lieutenant Paul E. Koefod, Cavalry*

MEN in the army know how difficult it is to estimate range by eye. Except at short distances, the method is uncertain. A soldier who can estimate range with reasonable accuracy is an exception. However, there is no need for total reliance upon the unaided eye. Each platoon has at least two instruments in common use which can take the guesswork out of range determination.

The binocular is a highly useful but seldom fully exploited piece of reconnaissance equipment. Old-timers know many uses for it, but we of the new army too often seem prone to be satisfied merely to look through the instrument. As well as being an invaluable aid to the discovery of the enemy, the binocular is helpful in determining exactly how far the enemy is from an OP. The compass, also, has a variety of uses, although it is often considered as being no more than a direction finder. These instruments, used with the mil formula, singly or combined, enable the observer to locate distant points or objects quickly and accurately.

When using the binocular with the mil formula, the length, width or height of familiar objects is the known factor. The angle, in mils, subtended by such known length, width or height is read in the binocular. With these two easily determined factors one can solve for range. If the compass is used, the known factor is a short base line arbitrarily established at the OP. The angle at the apex of the triangle, which is subtended by the short base, is easily computed by subtracting the sum of the base angles from 3,200 mils. The size of the angle subtended by the base line and the length of the base line being known, range can be determined readily.

Exact ranges along definite azimuths from established OP's to observed enemy concentrations or installations are invaluable to higher headquarters. Definite, accurate and quickly passed information eliminates guesswork and simplifies operations. The answer to "Where?" is vital.

Suppose that from an OP an enemy trooper is observed. With the binocular, both his head and feet can be seen. He is approximately two yards tall. His height subtends an angle of 2 mils, which angle is determined from the vertical mil scale in the lens of the binocular. Dividing his height by the number of mils, his height subtends (2 yd. + 2 M), the answer, 1, is secured. This figure reveals the enemy trooper to be 1,000 yards from the OP. (See Fig. 1.)

The mil formula is expressed thus: M R = 1,000 W. The angle in mils times the range in yards equals 1,000 times the width. Width is the length of the arc which subtends (is opposite to) the angle. W, length of the arc, is expressed in yards.

M R = 1,000 W. By substituting, we have M = 2, R = 1,000, W = 2.

$2 \times 1{,}000 = 1{,}000 \times 2.$

2,000 = 2,000 Divide both sides of the equation by 2,000 and

1 = 1

When range is sought, the formula is expressed:

$$R = \frac{1{,}000\ W}{M}$$

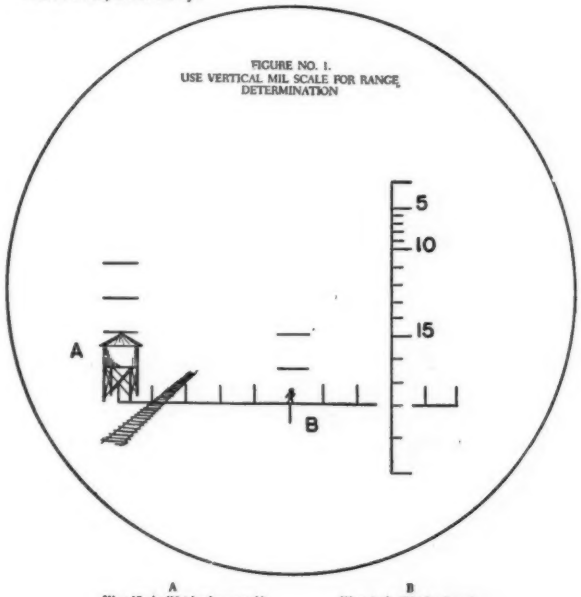
$$R = \frac{2{,}000}{2}$$

R = 1,000 (yards)

Since the range is sought, and since the range is expressed in thousands of yards, work is simplified by cancelling thousands on both sides of the equation.

*C.R.T.C., Fort Riley.

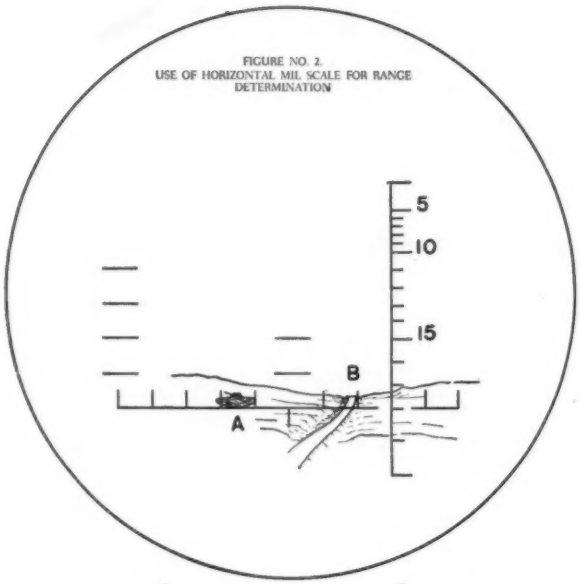
FIGURE NO. 1.
USE VERTICAL MIL SCALE FOR RANGE DETERMINATION



A	B
W = 15 yds. (Height of water tank)	W = 2 yds. (Height of man)
M = 10 (Mils read in binocular)	M = 2 (Mils read in binocular)
$R = \frac{15}{10}$	$R = \frac{2}{2}$
R = 1.5 (Thousands of yards)	R = 1 (Thousands of yards)
R = 1,500 yds. (Range)	R = 1,000 yds. (Range)

Any object the height of which is known may be used for "W"; *e.g.*, the height of a telephone pole.

FIGURE NO. 2.
USE OF HORIZONTAL MIL SCALE FOR RANGE DETERMINATION



A	B
W = 5 yds. (Length of light tank)	W = 7 yds. (width of concrete)
M = 6 (Mils read in binocular)	M = 2 (Mills read in binocular)
$R = \frac{5}{6}$	$R = \frac{7}{2}$
R = .833 (Thousands of yards)	R = 3.5 (Thousands of yards)
R = 833 yds. (Range)	R = 3,500 yds. (Range)

Any known length, width, space or distance may be used for "W", *e.g.*, the distance between telephone poles.

The result is:

$R = \frac{W}{M}$ R (range expressed in the *number* of thousands of yards) equals W (width expressed in yards) divided by the number of mils that width subtends.

R = 2 + 2

R = 1 The number of thousands of yards of range.

The formula, $R = \frac{W}{M}$, is simply the original mil formula in short form. Thousands have been removed from both sides of the equation to make arithmetic quicker and easier. Since units are now dealt with, the answer, R (range), will be expressed in units—the number of thousands of yards. To secure the range, multiply the number of thousands of yards (in the above case, 1) by 1,000. R in the above example equals 1 × 1,000: one thousand yards.

Take another problem. A railroad water tank is fifteen yards tall. Its height subtends an angle of ten mils as read in the vertical scale in the binocular. Range from the OP to the tank equals the height of the tank in yards divided by the number of mils that height subtends times 1,000.

R = 15 ÷ 10 = 1.5 × 1,000 = 1,500 yards.

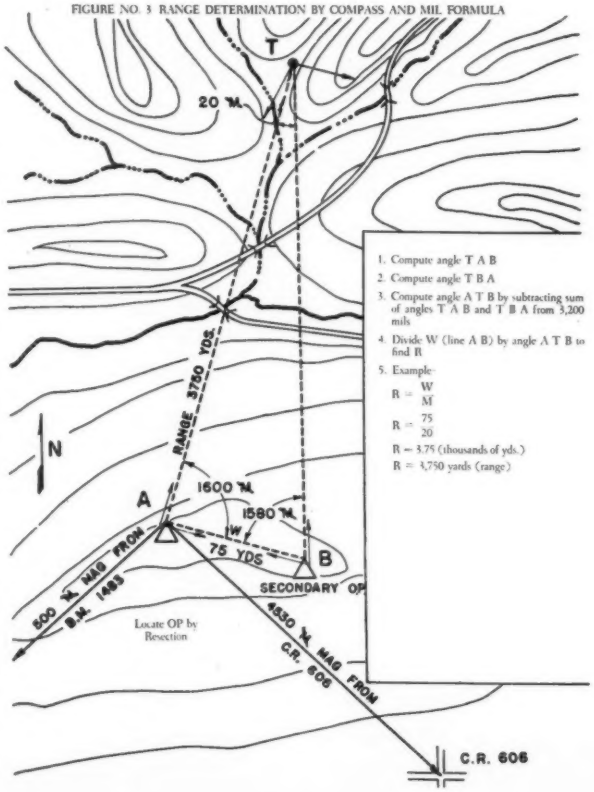
Range to points or objects can be as easily measured by using the horizontal mil scale in the binocular. Let us say a light tank is five yards long. Its length subtends a little more than five mils in the horizontal scale. By interpolating, the mils are determined to be six. Dividing 5 by 6, the figure .833 is obtained. Multiplied by 1,000 the figure .833 expresses a range of 833 yards. (See Fig. 2.)

A two-lane concrete highway is approximately seven yards wide. The range from an OP to the crest of a far hill can be determined by reading the angle in mils subtended by the width of the highway where it seems to disappear beyond the crest. Observing, the width of the highway is estimated to subtend 2 mils in the horizontal scale. Dividing 7 yards by 2, the range to the crest is determined to be 3.5 thousands of yards, or 3,500 yards. Range estimation by eye can be accomplished no more quickly. Neither is it so accurate. The mil scale and the mil formula take the guesswork out of range determination.

If one knows or can estimate the length, width or height of anything, his binoculars and the mil formula will give him a very close approximation of the range to that thing. A truck or tank or gun carriage is about two yards wide. What is the width of a column of infantry or horse in closed formation? in open formation? The lengths of light, medium and heavy tanks and of cars and trucks can be learned easily. A jeep is about three yards long. Dimensions of enemy vehicles are easy to obtain and to learn. Buildings of certain types vary little in height. Most box cars are twelve yards long and their height is easily determined. Memorization of a few easy widths, lengths and heights will provide the key to the range of almost any object or point.

The range to an object can be determined with the compass and mil formula, too. Instead of having the width at the target and the angle at the OP, the situ-

FIGURE NO. 3 RANGE DETERMINATION BY COMPASS AND MIL FORMULA


T
20 M.
RANGE 3750 YDS.
N
A
1600 M.
1580 M.
W
75 YDS
B
SECONDARY OP
500 M. MAG FROM B.M. 1483
4830 M. MAG FROM C.R. 606
Locate OP by Resection
C.R. 606
1. Compute angle T A B
2. Compute angle T B A
3. Compute angle A T B by subtracting sum of angles T A B and T B A from 3,200 mils
4. Divide W (line A B) by angle A T B to find R
5. Example-
R = W/M
R = 75/20
R = 3.75 (thousands of yds.)
R = 3,750 yards (range)

ation is reversed. An arbitrary width is established at the OP as the base of a triangle, and the angle at the target or objective (apex of the triangle) is determined. (See Fig. 3.)

Suppose one observes from an OP for higher head quarters. He first locates the OP by resection and sends the information of its location back so that headquarters knows exactly where the OP is. Observing with binoculars, an antitank gun is spotted. The azimuth to the gun is determined by compass. The azimuth to any suitable object to the right or left of and nearly at right angles to the line OP-AT gun is then read. The angle between the lines OP-gun and OP-object is computed by comparison of the two azimuths and written down. (To compute size of base angles, subtract smaller azimuth from larger azimuth. If their difference is greater than 3,200 mils, subtract that difference from 6,400 mils to determine the size of the angle.) A bayonet placed upright at the point where the compass was held for the first two readings will be an aiming point for the next reading. Any desired distance is paced off toward the object of which the azimuth was taken. At least 50 yards, but not more than 100 yards, are required. For easy arithmetic, the length of the base should be kept in even tens of yards. From the point arrived at, the observer determines the azimuth to the OP and the azimuth to the AT gun and, by comparing them, computes the size of the angle between the line of the base and the line of the gun. By adding the two angles and subtracting their sum from 3,200 mils, the observer arrives at the size of the angle at the gun. Since the distance paced off (in yards) subtends the angle at the gun, divide the distance in yards by the size of the angle in mils, and the number of thousands of yards from the OP to the gun is secured. A message can now be sent back to the effect that at a certain range on a designated azimuth from the OP an enemy antitank gun is located. (Location of an OP may be determined by compass and mil formula, using a single known point as a reference.)

If two compasses are available at the OP and if two observers are present, one observer can be sent with a compass to the secondary point. To determine the two base azimuths, each observer sights on the other's compass. While A sights to the gun, B sights to A's compass. When B sights to the gun, A sights to B's compass.

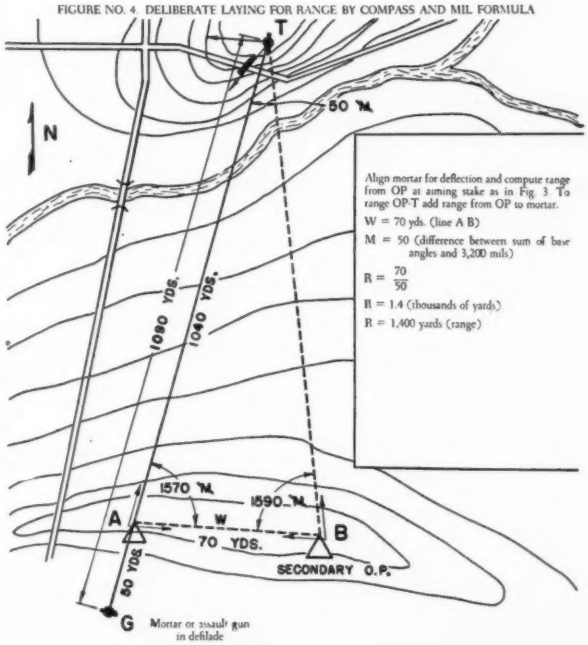
Range may be computed by compass and mil formula another way. Determine the azimuth of the OP to the observed object and establish a base at right angles to it. Pace or measure off any desired distance along the base line and establish a secondary OP. Determine the azimuth from the secondary OP to the observed object. The angle at the object can be computed by comparison of these two azimuths. This method is based upon the principle that, where parallel lines are bisected by a straight line, alternate interior angles are equal. The smaller azimuth differs from the larger azimuth by the to the larger azimuth at either of the OP's. Smaller azimuth may be considered the bisector. Subtract the smaller azimuth from the larger azimuth. The difference (in mils) is the size of the angle subtended by the base line. If the difference between the azimuths is greater than 3,200 mils, subtract that difference from same number of mils that it differs from a line parallel 6,400 mils to determine the size of the angle. Solve for range by the mil formula by dividing the length of the base in yards by the size of the angle in mils.

Because of the need for interpolating between the 20 mil graduations on the compass, the range will not always be exact. However, the range so determined—if the observer is careful—is very much more nearly exact than if estimated. The author has determined range by compass and mil formula within four yards of the measured range. Inclusion of a sketch or description of the ground where the observed object is located will enable higher headquarters to plot the location of the piece within a few yards. Artillery fire could be laid on it with the first round or salvo. Friendly units could detour it or attack it successfully.

Range determination by the above means has further uses. A mortar or an assault gun can be laid for range by either of the above methods. With the range so determined, surprise fire can be laid on the target. Careful range computation will enable a crew to lay the first round within its effective bursting radius of the target and eliminates much sensing. If not in, the first round should be so close as to make but one adjustment necessary. (See Fig. 4.)

An enemy who realizes his position is being "sensed" by fire can pull out and escape that fire. Accurate sur-

FIGURE NO. 4 DELIBERATE LAYING FOR RANGE BY COMPASS AND MIL FORMULA


T
50 M.
N
Align mortar for deflection and compute range from OP at aiming stake as in Fig. 3. To range OP-T add range from OP to mortar.
W = 70 yds. (line A B)
M = 50 (difference between sum of base angles and 3,200 mils)
R = 70/50
R = 1.4 (thousands of yards)
R = 1,400 yards (range)
1090 YDS.
1040 YDS.
1570 M.
1590 M.
A
W
B
70 YDS.
SECONDARY O.P.
80 YDS.
G
Mortar or assault gun in defilade

prise fire gives him no such opportunity. Range determination by binocular and mil formula is a matter of seconds. Three minutes are sufficient to determine a range by compass and mil formula. A few additional minutes consumed in deliberate laying will save both time and ammunition wasted in sensing, and will speed destruction of the enemy.

Correct initial adjustment of fire must be stressed as of greatest importance in a war of maneuver. Targets of opportunity not destroyed at once will vanish. Together with accuracy in the initial laying of weapons, range determination by these methods provides constant field checks which will increase proficiency in range estimation by eye. More than this, the methods suggested provide practical exercises which will increase proficiency in the use of the compass and binocular.

Determining Initial Direction For Mortar Fire

*by 1st Lieutenant Paul E. Koefod, Cavalry**

A MORTAR can be laid for initial direction quickly and accurately without the use of an alidade or similar device. Alignment by eye is a basic method of placing the aiming stake. This method relieves mortar crews of dependence upon gadgets which must be carried, and loss of which places them at a disadvantage. Precious time and ammunition are wasted by crews which cannot determine initial direction quickly and accurately without aids.

Knowledge of the employment of aids for determination of initial direction in unusual situations is important. Useful as they undoubtedly are, extra methods provided by aids are supplemental methods. Normally, the simplest method is the most efficient method. In keeping with simplicity, two basic methods are suggested. Neither requires aids for accurate placement of the aiming stake on the line, mortar-target. Both are easily taught, and both can be learned quickly by doing. The first method is called "foresighting" and the second is called "backsighting."

To place the aiming stakes by foresighting, the mortar corporal takes a position behind the mortar—on a slope, stump, truck, etc.—from which he can see both mortar and target. He directs laying of the tube on the line mortar-target, and sends a man forward to place the aiming stake. By sighting over the collimator sight to the target, the corporal can direct placement of the aiming stake exactly on the line sight-target. Foresighting is a simplification of the "sight case" method outlined in the mortar manual.

When the aiming stake is set by backsighting, the mortar corporal takes the aiming stake to a position in front of the mortar from which both mortar and target can be seen. He places himself as nearly as possible on the line mortar-target, aiming stake in hand. Facing the target, he squares himself with the line from himself to the target. The corporal may either stand or kneel. After sighting the line from himself to the target carefully for a moment, he bends forward and closes his eyes. When in position to look back between his legs, he opens his eyes. The first object seen is on an extension of the line from the target to himself. He has, in effect, turned himself through an angle of 180°.

If inspection reveals the collimator sight to be one side or the other of the line backsighted, the corporal moves sideways in the direction the sight is from that line. Squaring himself with the line from his new position to the target, he sights that line and backsights again. If still not on the line sight-target, he moves sideways again and repeats the process of backsighting. With a few tries, and within a few seconds, the corporal can place the aiming stake between his knees or feet exactly on the line from the collimator sight to the target.

Careful, practical backsighting is as accurate as the alidade method. Second, the aiming stake can be placed accurately in less time by backsighting than it can by the alidade method. Third, backsighting requires no aids which, with other methods, must be carried. Backsighting can be done kneeling or standing, and a minimum of practice is required for proficiency. Backsighting provides a basic method adaptable to a wide variety of situations, and it eliminates dependence upon aids.

Backsighting has a further useful application. For range estimation over flat surfaces, such as fields or bodies of water, backsighting provides a truer, more realistic estimate of the range than can be gained by looking straight to the front. By looking back between the legs one gains perspective. Concentration on the range to the target is much simpler when the legs obscure all extraneous terrain from the picture. Much of the inaccuracy coupled with range estimation is due to lack of perspective. Backsighting provides a convenient —if somewhat grotesque—answer to the problem of perspective.

*C.R.T.C., Ft. Riley, Kansas.

Book Reviews

As a result of inquiries received in our Book Department, THE CAVALRY JOURNAL *is starting a new service. Readers of the* JOURNAL *are invited to write to the Book Department and give subjects on which they would like lists of authoritative books. Lists containing recognized and new publications, with brief summaries of the text, will be sent at once. Lists of fiction will also be compiled. Books may be selected from these lists for immediate shipment, or at stated intervals.*

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HITLER'S GENERALS. By W. E. Hart. Doubleday, Doran. $2.75.

The present moment is most propitious for the publication of an outstanding book on Hitler's generals. It is most unfortunate that, in spite of Mr. Hart's obvious knowledge of Nazi politics, his book fails to present a complete and unprejudiced view of his subject. He tends to overemphasize the social distinctions between the "new" generals, and those of Junkers class. There is a too obvious effort to excuse the Junkers for defects common to both groups, while the wholesale condemnation of Rommel's ability appears at times to be unnecessarily biased.

Only four of the leaders discussed were still in key positions at the time the book appeared, and at least one of those has fallen from grace since the Allied landings in France.

REVOLUTIONS IN RUSSIA. By G. R. Treviranus. Harper & Brothers. $3.00.

For many years books on Russia tended to fall largely into two classes—eulogies which overlook obvious faults in too great an enthusiasm for an ideal; and indictments which ignore the advances of the Soviet in abhorrence of a revolutionary idea. The last few years have brought more unbiased presentations than would have seemed possible 10 years ago. *Revolutions in Russia* is an outstanding example of an historical résumé and objective explanation of revolutionary politics and economics from the reforms of the 19th Century to 1917, the civil war, the NEP, the Five Year Plans, the purge and the prospects of the future.

The conclusions in the last few chapters will be questioned by many serious readers who will not agree that collectivized agriculture is "organized slavery." Opinions of this sort do not affect in any way the excellence of the main body of the book, which is undoubtedly an outstanding contribution to the literature about Russia.

HE'S IN THE CAVALRY NOW. By Brig. General Rufus S. Ramey. McBride. $2.75.

General Ramey, formerly Commandant of The Cavalry School, Fort Riley, Kansas, has written a most informative, profusely illustrated, book describing the training of cavalry officers at Fort Riley, the various phases of warfare with which the cavalryman has to be familiar, and the use of cavalry units in the field.

The book closes with chapters on the use of a mechanized cavalry troop in Africa, a mechanized cavalry squadron in Tunisia, and a reconnaissance troop in Attu.

AUSTRALIA AND THE PACIFIC. By Members of the Australian Institute of International Affairs. Princeton University Press. $2.50.

In his preface to this book, W. L. Holland, Research Secretary of the Institute of Pacific Relations, states, "Hitherto . . . there has been no up-to-date and representative Australian study published in North America to which serious readers could be referred for a picture of characteristic Australian points of view on the immense problems of wartime changes and postwar readjustments in the Pacific."

This compilation of authoritative opinion gives an over-all explanation of Australia's position on those phases of her economic and social life that vitally concern the other nations of the world.

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THE OFFICER'S GUIDE—1944 EDITION. $2.50.

THE SOLDIER AND THE LAW. By Lt. Col. John A. McComsey and Major Morris O. Edwards. $2.00.

ARMY FOOD AND MESSING—1944 EDITION. $2.50 Military Service.

These three standard guides have been received in the new 1944 editions within the last month.

The Officer's Guide has had a complete overhauling. "Uniforms and Equipment" has been rewritten from stem to stern. "Pay and Allowances" has been reworked to advantage. "Personal Affairs of Officers" contains considerable new information; and another chapter, "Going Home," has been added.

The Soldier and the Law in its 1944 edition, with supplement on the outline of procedure for trials and courts-martial and explanation of the articles of war, will be a welcome addition to the military library.

Army Food and Messing appears in its new fourth edition with valuable improvements in the text and many new photographs.

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HANDBOOK TO ARMY REGULATIONS AND OTHER DIRECTIVES ON ADMINISTRATION. By Lt. Col. Walter Sczudlo. Military Service. $2.50.

The introduction states: "This book is a guide to performing military duties, to Army Regulations and similar directives, and a reference book for information on any administrative matter. It contains a selection of Army Regulations and other directives of a general administrative nature, grouped alphabetically by principal subjects, condensed, digested, and supported by detailed citations of source material."

No index or table of contents is included since the topics are arranged alphabetically and necessary cross-references supplied in the text.

Coördinating and clarifying a large quantity of information in an easily understood manner, this handbook will be invaluable, not only to officers, but to noncommissioned officers and men as well.

PACIFIC OCEAN HANDBOOK. By Eliot G. Mears. James Ladd Delkin, Pub. $1.00, paper; $2.00, cloth.

As a compact, well indexed, streamlined guide to the Pacific Ocean, this volume will be of considerable value. Its charts and maps are of an excellent caliber. The author seems to have amply fulfilled his aims to produce "an up-to-date Pacific almanac and geography for the navigator and traveller . . . and for our armed forces in this arena."

RUSSIA AND THE PEACE. By Sir Bernard Parés. Macmillan. $2.50.

Familiarity with the Russian people and their habits of mind, bred of many years association with them, is a striking feature of this book. Sir Bernard Parés has endeavored to create in the reader an understanding of the inevitable influence that so powerful an ally must have on the peace. He has studied Russia since his first visit in 1898, watched it throw off Tsarism, and followed its advance under the present government. The book is a sincere effort to dissuade others from the "fear of the unknown" that may still exist toward the Soviet.

SIX WEEKS' WAR. May 10-June 25, 1940. By Theodore Draper. The Viking Press. $3.00.

Most of the books thus far written on the subject of the fall of France are the products of men endeavoring to explain the conditions incident to the tragedy—attempts either to justify or condemn.

Sgt. Draper, who for the past 10 years has been a newspaper writer on European affairs, has made a thorough investigation of his subject. As a result of this research he has produced a book which adds little new material to that already published, but coördinates the facts in a well rounded, analytical and comprehensive fashion, not found in previous volumes.

Ample notes, index and appendix put this book in the reference class, and it should retain its value for many years to come.

ARGENTINE DIARY. By Ray Josephs. Random House. $2.75.

The New York *Times* Book Review Supplement says of *Argentine Diary*:

"This book gives a crystal-clear picture of the political situation that has developed in Buenos Aires. It will ring a sharp alarm in the minds of people who have thought that our Good-Neighbor policy had won South America to our way of thinking and that Franco had no influence beyond Gibraltar. Its lessons for the future are two: first, that the Fascist parade in South America marches 'to a tune played in Madrid, and the tune is called in Berlin'; second, that Nazism may not be expected to end with Germany's defeat, but can appear again and again in the plots of lesser imitators who will use its technique for their own ends."

REQUISITION IN FRANCE AND ITALY. By Maurice K. Wise. Columbia University Press. $2.75.

An important corollary of the power of requisition by the state is the right of the individual to legal safeguards of his property and services. When the two essential parts of the institution of requisition threaten to become critically out of balance, the choice between requisition regulated along liberal lines, or vaster, less specialized powers, faces the nation.

Dr. Wise, in his history of requisition in France and Italy, shows the significance of the various phases through which requisition passed in these two countries prior to the present war. He points out the occasion for requisition, its objective and the exercise of its power. He has made a thorough research in order to show the laws enacted in an effort to substantiate the proper balance between the collective and private interests necessary if dictatorship is not to result from the use of requisitional powers.

The volume is well annotated and indexed. The information contained in it will undoubtedly be of interest and value to students of national economics and other groups dealing with requisition as a necessity of military government or as a result of other economic catastrophies.

MEET YOUR ALLIES IN WAR AND PEACE. Edited by Nicholas G. Balint. International University Press. Paper, $1.00; Bound. $1.50.

Meet Your Allies is an interesting collection of pictures and thumbnail sketches designed to give Americans a glimpse of their Allies in this war. It is a nicely presented little volume, but the information is almost too limited to be of value.

DICTIONARY OF SERVICE SLANG. By Park Kendall. M. S. Mills Co. $1.00.

Listed in this little book are slang terms used by U. S. soldiers, sailors, Marines, Spars, WACs, Waves, Army and Navy Nurses; the Australians, New Zealanders; the Wrens and Waafs. While it might be considered amusing, this dictionary is not sufficiently complete to have any real value, and there are some really amusing books on the market that will last the reader a few hours longer.

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THE THREE-POWER ALLIANCE AND A UNITED STATES-JAPANESE WAR

By KINOAKI MATSUO

Here is the Japanese blueprint for victory in a book by an officer of the Japanese Naval Intelligence, published in Tokyo in October, 1940. It is complete with a timetable of operations, to which events since December 7th have so far strictly adhered.

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WEST POINT. By E. D. J. Waugh. Macmillan. $2.50.

This story of the United States Military Academy begins with the history of the fortress in colonial days and follows through to the present training now given cadets. The book carries many interesting notes on the parts that West Point men have played in the U. S. Army during the nation's wars, and comments on the men now prominent in World War II.

It is most unfortunate that the general treatment of the book is too sentimental in nature to mark it as an outstanding history.

LONG-RANGE FLIGHT. By Colin Hugh McIntosh. McGraw-Hill. $2.50.

The chief navigator of American Airlines has written a text for training pilots and navigators in the essential techniques of aircraft operations for long distance flight. He explains the principles of efficient engine operation, the use of airplane cruising charts, methods of cruising control, preflight planning, and controlled flight through use of the "howgozit" chart. Sample charts and graft are included.

THE REST OF YOUR LIFE. By Leo Cherne. Doubleday, Doran. $2.75.

Mr. Cherne is a man of fact, and he deals with figures, not dreams. In this down-to-earth book on the postwar world he points out the difficulties to be faced, and reminds the reader that the quiescence of certain peacetime problems is merely temporary.

There is little mention of plastic kitchens and family gyroplanes. There are pages upon pages of intelligent discussion of economic and sociologic facts that will run our lives unless we learn to use them to steer the course of our own existence.

This book will not cure insomnia, but it does give ample warning that to substitute inertia for interest in national affairs is far more dangerous in peace than in war.

HOW JAPAN PLANS TO WIN. By Kinoaki Matsuo. Translated by Kilsoo K. Haan. Little, Brown & Co. $2.50.

The Three-Power Alliance and a United States-Japanese War was first published in Tokyo in 1940—a kind of Japanese *Mein Kampf*. It was brought to this country by two Japanese army officers to be used for propaganda purposes amongst West Coast Japanese. Mr. Haan successfully secured an original copy from the officers without their knowledge, translated the text, and published it under the title *How Japan Plans To Win*.

Familiarity with this blueprint for Japanese victory is as essential to officers fighting Japan as is a knowledge of *Mein Kampf to* those in the European theater. The importance of both of these books has been sadly underestimated. Hitler made the statement that if plans were mad enough others would readily discount them as impractical, and they might be pursued to their completion without interference.

It is most unfortunate that this book, outlining so clearly the Japanese aims against the United States, should not have received more widespread publicity.

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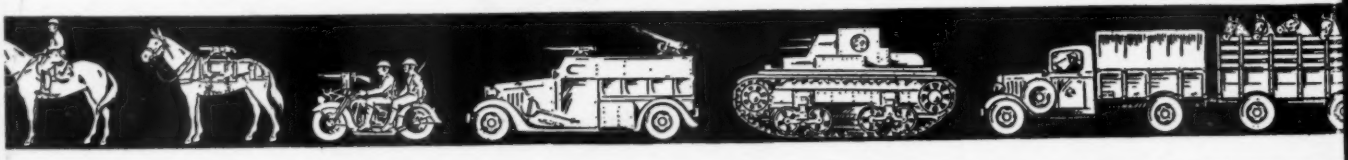
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